Photo. S. B. Ivies & Co.

WESTMINSTER CATHEDRAL.

By Charles Hadfield [*F.*].

Read before the Royal Institute of British Architects 16th March 1903.

IN the preparation of the Paper which I have undertaken at the request of the Council of the Royal Institute, on a building project of so unique a character as that of the new Westminster Cathedral, some preliminary remarks are obviously called for regarding the conception and carrying out of an undertaking which has been recognised to be "the greatest material expression of religious faith given to England by devout Roman Catholics since the Reformation"*—a work which must be for all time an architectural landmark emphasising the passing of the nineteenth and the opening of the twentieth century.

In the first place let me express a keen sentiment of regret that it has fallen to me here to-night to tell a story that would obviously have been far better told by the late John Francis Bentley, who, like many another distinguished architect, has passed away leaving, alas! a great life's work unfinished.

I own to a feeling that the preparation of a Paper on such a building as the Cathedral in its incomplete condition (the decorative details internally being now only in progress) is a difficult and delicate task. I wish its preparation might have been delayed until the interior scheme of decoration and the accessorial details were more advanced and formed fair subject for comment, as their absence must, perforce, rob the Paper of interest. Nevertheless, I have,

* *Pall Mall Magazine*, October 1902.

with the approval of the late architect's representatives, gladly complied with the Council's request, feeling that I could testify to cherished associations of a friendship of well-nigh forty years with a man whom to know intimately was to love and to admire, and that I could, without intruding my own personal feelings and relations, pay a friend's tribute to his memory.

I do not purpose to-night to enter at length into the historical or even the æsthetic side of the new Cathedral. Its external aspect is already familiar to the architectural public, and the building, considered as a whole, has been the theme of many critics. Contenting myself with an outline of the initiation of the project by Cardinal Wiseman, its further development by Cardinal Manning, and its happy accomplishment by Cardinal Vaughan, I have rather preferred to enlarge on the designer's work from a practical and constructive standpoint—a standpoint from which he himself took pleasure in regarding it.

In the early years of the past century English Catholics were emerging from a condition of obscurity, the outcome of long years of repression and social ostracism. For time out of mind they had been obliged to meet in mean chambers or lowly chapels in back lanes, there to celebrate as best they might those solemn rites for which the stately cathedrals and parish churches of the olden time had been deemed not one whit too glorious; but the dawn of better times was breaking when, on 5th August 1817, the foundation-stone of S. Mary's Chapel, Moorfields, was laid.

The sacred edifice, lately removed to give place to the exigencies of recent times, was of sufficient importance to merit notice and illustration in Britton and Pugin's *London*. The cost is said to have been £26,000, and the opening and dedication service took place on 22nd April 1820. There, in 1836, Nicholas Wiseman—afterwards Bishop, and created by Pius IX. Archbishop of Westminster in the restored hierarchy in 1850—attracted by his learning and eloquence crowded audiences of varying shades of opinion, and roused the Catholic body from a state of desponding lethargy to hope and action. I need not enlarge upon his subsequent elevation as Cardinal and his brilliant career, saving to note that the idea of erecting a worthy cathedral for the metropolitan see of Westminster originated with him during his last illness, a few months before his death in February 1865. On 25th May of that year a public meeting was held at the Hanover Square Rooms in London, which pledged itself to erect the cathedral as a fitting testimony to the splendid services he had rendered to his fellow Catholics. The project was taken earnestly in hand by his successor the late Cardinal Manning, who regarded it as a sacred trust, but stipulated that the education of the children of the poor in his extended diocese would have to be assured on a solid foundation ere a stone of the material cathedral was laid. This noble condition was, needless to say, fulfilled to the letter during many years of effort and self-sacrifice on the part of His Eminence. Meanwhile, in August 1868, after lengthened negotiations, a site of about two and a half acres near Carlisle Place was secured, at a cost of £36,500, and in 1873 the late Mr. H. Clutton [*F.*] was asked to prepare designs for a stately cathedral, 450 feet in length by 250 feet in width, of an Early Pointed style. These designs, owing to a change of site and for various other reasons, remain on paper; and eventually, in 1884, the present Cathedral site, containing about four acres, on a portion of which had stood the Middlesex county prison of Tothill Fields, was acquired for a sum of £55,000.

Cardinal Manning died in January 1892, leaving to his successor the task of raising the sacred edifice. With the advent of His Eminence Cardinal Vaughan, the present Metropolitan, the story of the Cathedral entered upon the second period, to which I now ask your attention.

Before the close of the year 1892 Archbishop Vaughan was appointed to the vacant see, and he received the Cardinal's hat from Pope Leo XIII. early in the following year.

His Eminence, some time after his return to England, issued an appeal to the Catholic episcopacy, clergy and laity, pointing out many grave and weighty reasons why the work should be no longer delayed. Canon law required that a metropolitan see in a country like England ought not to be left without a Mother Church. It was, moreover, fitting and of great import that in the near future the solemn liturgical chants should be daily heard again, after a lapse of over three centuries, in the capital of the British Empire; that such a Cathedral was necessary to enable the metropolitan see to exercise its full legitimate influence and to take its proper place in the religious movement and awakening which was passing over the English people; and, finally, time had strengthened the reasons which had induced the Catholic body to pledge itself in 1865 to build the Cathedral as a memorial of Cardinal Wiseman, and had added to the name of Wiseman that of Manning with a double debt of gratitude. "The Cathedral would, therefore, be a fitting tribute to the memory of his two great predecessors."

The results of this appeal rendered possible an early commencement of building operations, and in May 1894 the question of the designing came on the *tapis*. Fortunately the idea of erecting a great basilican church, an attempt to reproduce old St. Peter's (the Vatican basilica), was abandoned as impracticable after much discussion and varying opinions; and with it, happily, the too prevalent form of procedure by competition.

To the delight of all his friends, after he had expressly declined to compete, Bentley was asked, early in July 1894, to undertake the designing of the new Cathedral. Towards the end of October, after carefully made preparation, he set out alone for the Continent, spending Christmas and some time in Rome in attendance upon Cardinal Vaughan and in studying the basilicas and other historic remains.

Leaving Rome, he visited S. Mark's, Venice, and the group of churches on the Adriatic Coast which had been influenced by the S. Sophia tradition. He did not carry out his intention of going to Constantinople, having satisfied himself with his studies at Florence, Venice, Verona, Milan, and Ravenna. In conversation with a friend, he admitted that the buildings at Ravenna first enabled him to decide on the forms and treatment of what had been in his mind. A letter dated 26th March 1895 announced his return, the previous week, "safe and sound, and none the worse for my many journeyings."

Back again in London, he rapidly put on paper the plan, with an internal area of some 54,848 square feet, of a great Byzantine cathedral which, with the general lines of the design, had been long maturing in his mind; and later an ingenious model was prepared one-forty-eighth the actual size, executed in Kauri pine, which is now at Archbishop's House. The Press gave publicity to the scheme at the time of the foundation-stone laying on 29th June 1895. This ceremony was carried out with every circumstance of ceremonial and impressive observance. The stone, a block of Cornish granite, 5 feet by 3 feet wide, and 2 feet 8 inches thick, was laid at the south-west pier of the sanctuary by Cardinal Vaughan, assisted by Cardinal Logue (who celebrated a Low Mass on the site of the High Altar).

The choice of the Byzantine instead of the Gothic style had been arrived at after much deliberation. It was recognised that even if it had not been desirable to avoid any appearance of rivalry with Westminster Abbey, the question of cost would have weighed heavily against a Gothic design—and that with modern appliances a Byzantine cathedral of brick could be erected within three or four years with the means at command, leaving the marble and mosaic decorations to be added as time went on and the necessary funds were available.

Bentley himself fully concurred in the decision. "It was thought by the Cardinal," he wrote in the *Cathedral Record*, "that to build the principal Catholic church in England in a style which was absolutely primitive Christian, which was not confined to Italy, England, or

to any other nation, but was, up to the ninth century, spread over many countries, would be the wisest thing to do. Personally I should have preferred a Gothic church ; yet, on consideration, I am inclined to think the Cardinal was right."

He writes in a letter dated 5th July 1895 :—" I cannot say how pleased I am that the 'Basilica' and Italian styles were cast aside. I intend to have few mouldings to the arches, indeed none at all to the great arches that will carry the domes. All the caps and bases will take a new departure, or rather a carrying-on of a very old one, and so with all the other details. I am not attempting a new style, that is impossible ; but intend, as far as I am able, to develop the first phase of Christian architecture." In a subsequent letter he says " that his mouldings and carvings are to be few, and the best he can design."

His Eminence has recently publicly expressed his gratification that in general matters he gave his architect a free hand. " Having," he added, " laid down certain conditions as to size, space, chapels, and style, I left the rest to him. He offered me the choice between a vaulted roof and one of saucer-shaped domes : I chose the latter. He wished to build two campaniles ; I said one would be enough for me. For the rest he had a free hand."

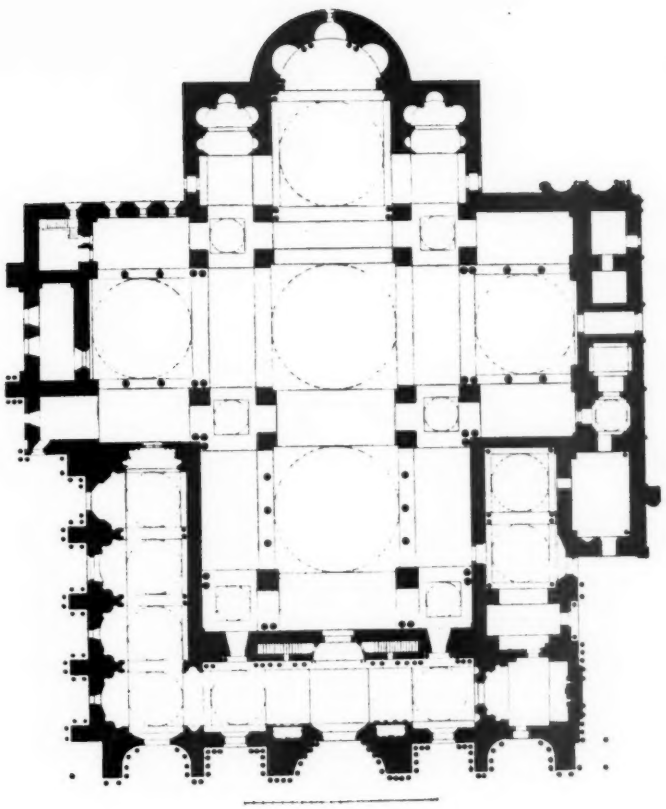
By the kindness of Messrs. Bentley and Son, whom I have to thank for much valuable information, I am able to exhibit a correct ground-plan, with longitudinal and cross sections. I am indebted to the Editorial Committee of the *Architectural Review* for permission to make use of the photographic illustrations which have appeared in the *Review*, for preparing the lantern-slides.* I show plans also of the churches of S. Sophia and SS. Sergius and Bacchus, Constantinople ; of S. Vitale, at Ravenna ; S. Zenone, at Verona ; of S. Mark, at Venice ; and of S. Front, at Périgueux, which churches I am instancing in the course of this Paper.

In the first number of the *Cathedral Record*, issued January 1896, when active building operations were in progress, an article by the Architect enables us to see, from his point of view, the nature of the design, its plan, &c., and it seems to me fitting that I should describe it, as far as possible, in his own words.

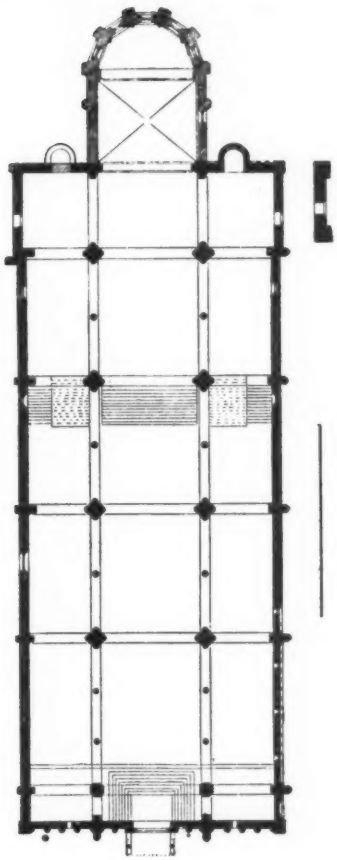
After remarking on the genesis and growth of church architecture at the close of Diocletian's reign, he traces the efforts of Constantine " when Christianity was proclaimed to be the State religion, and the seat of empire had been removed to Byzantium," culminating in " the erection by Justinian of that marvellous creation so fittingly dedicated to the Eternal Wisdom : that wondrous expression in material form of the Apocalyptic vision of the Heavenly Temple—the second church of S. Sophia at Constantinople." Passing on to the characteristic features of the Byzantine style and its differences from the Basilican, he proceeds : " What gives the building of this period a pre-eminence, and a greater interest over any other, is that it was the first phase of Christian Art ; that it expressed in full the hallowed genius of Christianity, and was the outcome of a sensitive æsthetic people inspired by the Seer of Patmos." He goes on to remark that his plan of the Cathedral is not that of the Eastern Church of the Justinian period, but " an example of what might have been unfolded, had not the decadence of the Roman Empire terminated the growth of congregational requirements in the East." He further says : " From a glance at the plan of SS. Sergius and Bacchus, at Constantinople, or of S. Vitale, at Ravenna, both of about the same age, it is evident that they were arranged from a liturgical rather than a congregational standard, while the Church of S. Mark, Venice, erected nearly four centuries later, indicates a marked advance in the latter direction, showing clearly the course the development was taking." †

* The Institute is also indebted to the proprietors of the *Architectural Review* for the loan of the blocks of the illustrations on pp. 261 to 264 of this Paper.—Ed.

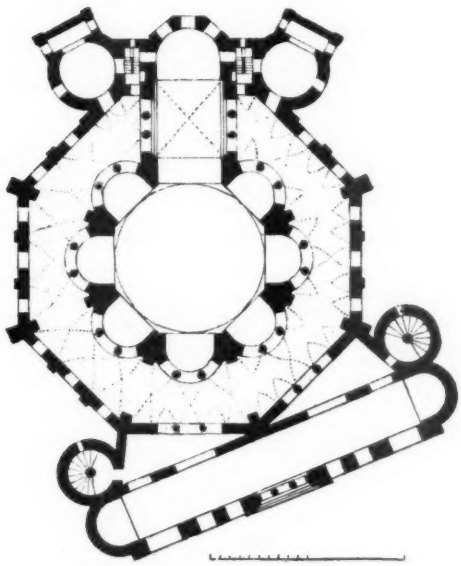
† The planning of the well-known church of S. Front at Périgueux, which was, it is said, erected many years later than the church of S. Mark at Venice, was a further development in this same direction.



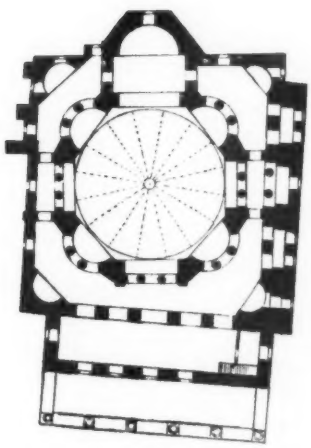
ST. MARK'S, VENICE.



SAN ZENONE, VERONA.

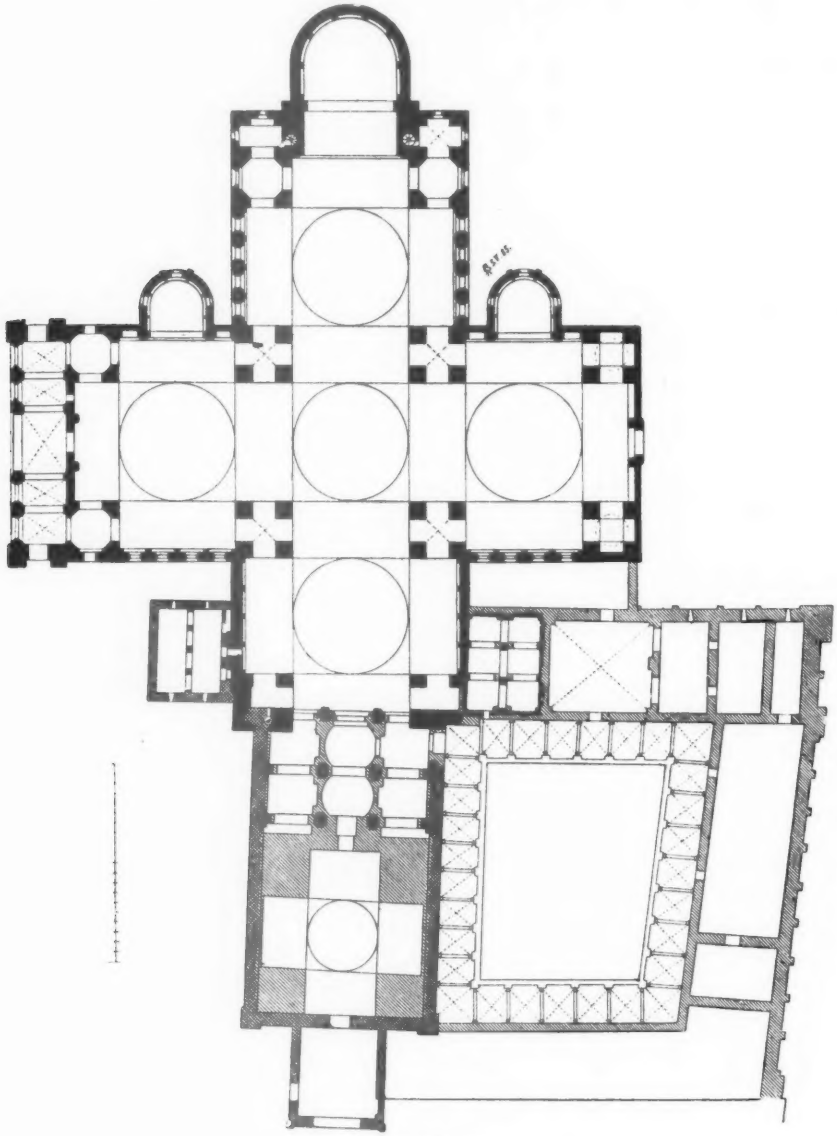


SAN VITALE, RAVENNA.



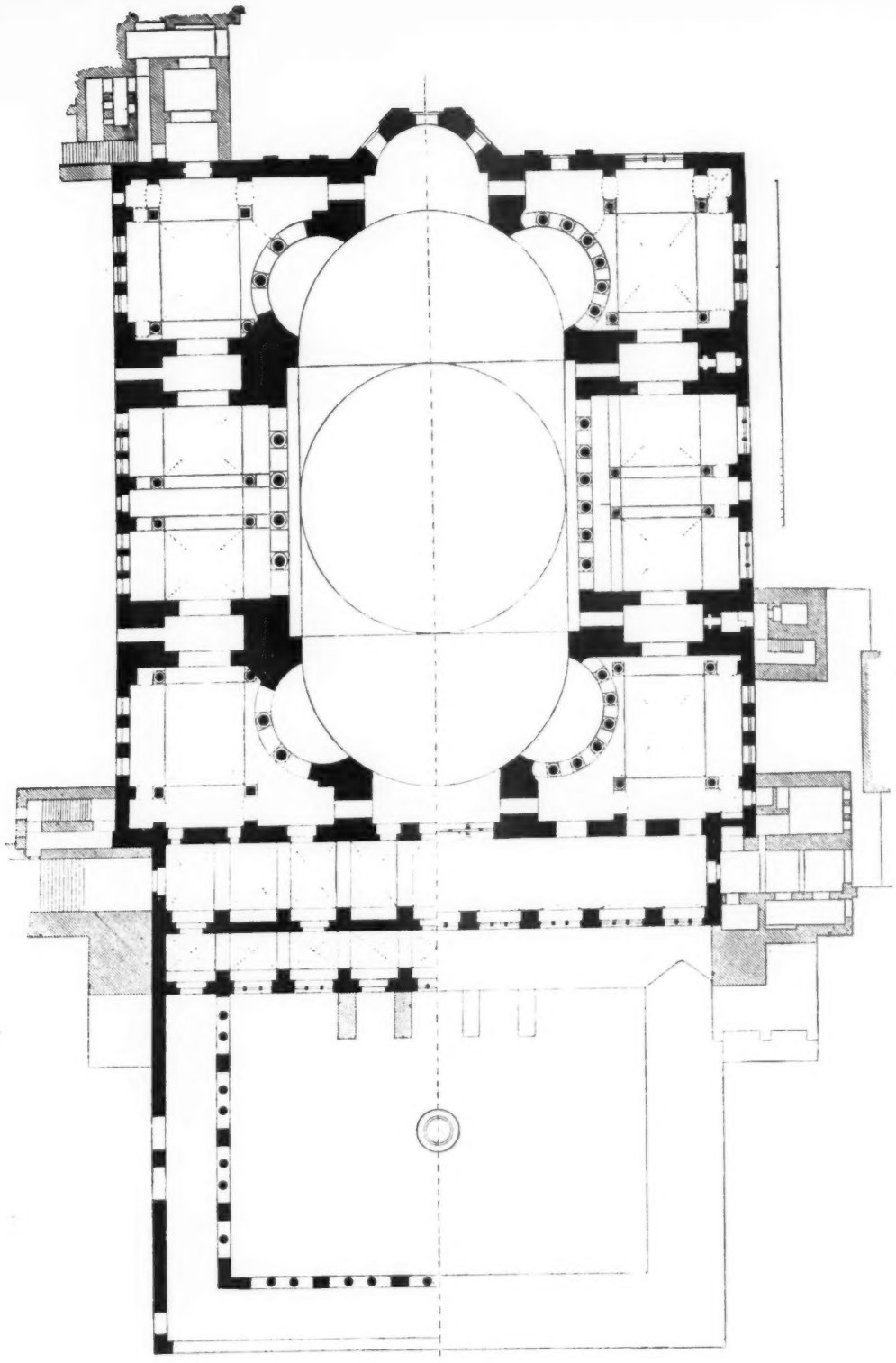
SS. SERGIUS AND BACCHUS, CONSTANTINOPLE

These remarks of the Architect, I submit, indicate, as the President pointed out so lucidly in his Opening Address this Session, that at Westminster the problem to be solved was



SAINT-FRONT, PÉRIGUEUX.

different from that required by the traditional Gothic plan of a great cruciform church, and this difference has naturally affected the whole design. And the President has told us "that in providing an enormous uninterrupted area"—a nave 60 feet wide, and some 200 feet long,



ST. SOPHIA, CONSTANTINOPLE.

surrounded by galleries and with processional aisles, accommodating a large number of worshippers—"the Architect has not forgotten the mystery so necessary for a religious building, which he has preserved by the careful lighting, the simple intricacy of its piers, its arches, its ambulatories, and its chapels."

That the problem has been successfully solved may be assumed not merely on studying the plan, but by the acknowledged fact of the excellent acoustic properties of the building, and the lighting, which stamp its fitness for great assemblies and for the celebration of solemn rites and functions, making it the "shadow of a great rock in the desert," a home and haven of refuge for God's poor.

The plan is doubtless familiar to most of my audience, and the illustrations given show the disposition of the general parts of the plan, and also the fact that the church is not orientated, the axis of the choir being turned to the SSE. This was demanded by the exigencies of a valuable site and surroundings, and by ruling considerations of cost, lighting, and the like; and it is moreover in accordance with Roman precedent, where churches had to follow the lines of existing streets and ways, a condition equally fulfilled in our densely crowded metropolis.*

An important factor in deciding the levels and lie of the foundations, crypt, &c., was the existence of a platform of concrete 9 feet thick, the foundations of the old prison, which underlies a portion of the site in a diagonal line drawn from the *north* jamb of the great

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The following Comparative Table of the Twenty-one Ancient English Cathedrals and Westminster Abbey is taken from the *Westminster Cathedral Record*, January 1896. The total areas down to Lichfield (inclusive) are as given in Fergusson's *History of Architecture* (London, 1893). The *breadths* and *heights* of the naves are from Britton's *Dictionary of the Architecture and Archæology of the Middle Ages* (London, 1838). The nave *lengths* are measured from west end to rood-screen, and are taken from *The Cathedrals of England and Wales* (*Builder* Series, 1894):—

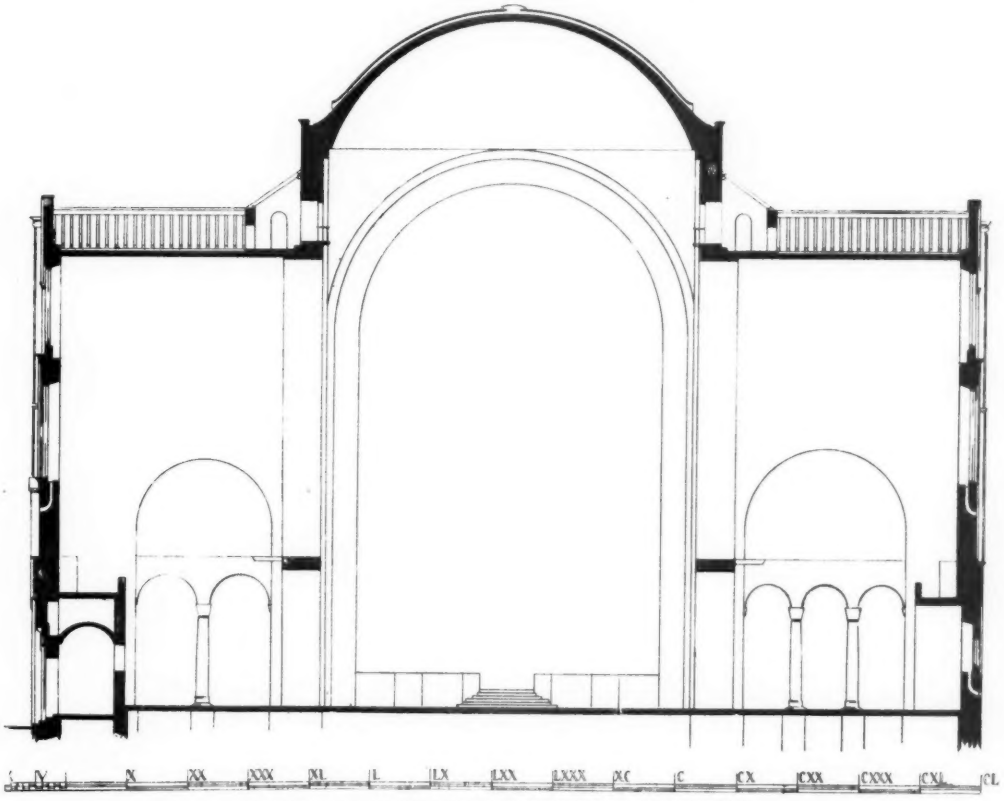
Name.	Total Area.	Nave.			Nave and Aisles.	Height.
		Length.	Breadth.	Area.	Breadth.	
Westminster Cathedral	54,848 sq. ft.	234	60	14,040	150	109
York	72,860 „	251	43	13,244	110	93
Lincoln	66,900 „	225	37	8,767	78	81
Winchester	64,200 „	245	32	10,272	88	78
Westminster Abbey	61,729 „	165	30	6,810	68	105
Ely	61,700 „	281	30	8,430	74	72
Canterbury	56,280 „	214	27	6,156	73	80
Salisbury	55,830 „	243	32	8,096	78	81
Durham	55,700 „	235	37	9,694	82	70
Peterborough	50,516 „	195†	35	10,220	79	73
Wells	40,680 „	193	32	7,424	70	68
Norwich	40,572 „	200	28	6,524	70	75
Worcester	38,980 „	213	30	6,150	78	67
Exeter	35,370 „	167	31	3,906	72	66
Lichfield	33,930 „	173	26	4,888	66	58
Bristol	27,280 „	158	31	4,928	69‡	54‡
Carlisle	16,350 „	—	—	—	72‡	—
Chester	39,725 „	180	41	6,724	84	—
Chichester	35,320 „	152	26	4,680	100	65
Gloucester	31,360 „	163	33	6,435	85	68
Hereford	33,073 „	154	28	4,480	70	63
Oxford	15,782 „	82	22	1,804	53	45
Rochester	21,950 „	145	32	5,504	73	54

* Although the Cathedral plan is not orientated, the words *North*, *South*, *East*, and *West* are retained in the description for the convenience of readers of the Paper.

† Line of present stalls.

‡ Choir.

entrance portal, to the south pier of the sanctuary arch, as marked on the plan. It was some 100 years old, very hard and solid, and lay beneath the whole of the Archbishop's House at the Ambrosden Avenue corner. I do not propose to deal with this residence in my Paper, except in passing to point out that it is a building of striking, though quiet, design, in perfect harmony with the Cathedral itself, from which it is approached by a cloister, and that it includes a large chapter-hall, galleries, and suites of reception-rooms, with residential



WESTMINSTER CATHEDRAL: SECTION THROUGH TRANSEPTS LOOKING EAST.

accommodation for the Archbishop and the Cathedral staff. It, too, has flat roofs, but they are not supported by vaults.

Externally the Cathedral has an extreme length of 360 feet and a width of 156 feet; the height of the nave being 117 feet; height of the façade (not including the turrets), 99 feet; height of the campanile, 284 feet. Internally the dimensions are, from the main entrance to the Sanctuary, 232 feet; depth of the Sanctuary, 65 feet; and of the raised choir beyond, 45 feet; making a total internal length of 342 feet; width of Nave, 60 feet; width across the Nave and Aisles, 98 feet; and across the Nave, Aisles, and side Chapels, 148 feet; height of the main arches of the Nave, 90 feet; and to the crown of the domes, 112 feet. The whole building covers an area of about 54,000 square feet [see comparative table, p. 256].

The Architect's leading constructive idea has resulted in a great building of brickwork,

set in cement mortar, covered by homogeneous concrete domes, vaults, and flats, &c., without recourse to the use of steel or iron work, and with a sparing use of oak timber in the roofs of the apsidal Choir and the Transepts, and of teak in the upper stage of the Campanile, with a provision for the gradual completion of the interior by lining it with marble up to a height of 40 feet, and above that with decoration of mosaic work. The following extract from a letter, dated 13th January 1902, emphasises the Architect's strong convictions on the question of girder-composite construction: "I feel that the old principle of construction is carried on, and that curse of modern construction and source of decay—the use of iron (or steel)—has been avoided against the consensus of opinion expressed by the engineers; thus much I am proud of, for I feel that a service to building has been effected, and that I have disproved, and broken the backbone of that terrible superstition, that the use of iron is necessary to long spans."

In the earlier stages of the undertaking Bentley's experimental tests of concrete and bricks were painstaking and exhaustive. It was ascertained that the best core for the concrete of the domes, and for general bearing purposes, was clean, hard brick refuse from the brickyards, broken to a walnut gauge, that Portland-stone chippings were more suitable for the concrete filling of haunches and domes, and Thames ballast for foundation work. The use of old brickbats or coke breeze he discarded because he had found that both tended to kill or starve the cement.

The external architectural appearance of the Cathedral has been the subject of varied criticism by the Man in the Street, but it has been generally appreciated by architects as noble and dignified in its features, striking in its sky-line, evincing knowledge and mastery of composition on the part of the designer, and originality of no ordinary merit. And I venture to urge that, looked at internally or externally, it must be admitted that the conditions imposed on the Architect to design a monumental building capable of being quickly erected, without excessive cost, have been loyally accomplished.

The total expenditure to 25th July 1902 amounted to £162,871, and of this sum £14,800 had been spent up to 31st October 1896 for preparing the site, for laying the foundation-stone, and for excavation and foundations. It is noteworthy that the vast amount of work was completed in spite of a troublesome strike of the bricklayers and labourers, causing a delay of some weeks' duration in the early portion of the year.

At this stage some particulars of the materials used since the commencement of active building operations in the summer of 1895 seem not inappropriate. They were regarded by Bentley, true master-craftsman as he was, with lively interest.

The excavations of the site were executed by Messrs. John Mowlem & Co. They extended to a length of about 375 feet, and to a width of about 170 feet, and to a depth in parts of about 20 feet. For the foundations of the Campanile over 1,300 cubic yards of earth had to be moved, and for each of the five main piers carrying the domes, and continuing as side walls of the chapels, a space 61 feet by 21 feet and 19 feet deep, making a total for these five piers of 4,500 cubic yards. The total weight of the earth removed in the excavations was over 10,000 tons, and about 16,000 cubic feet of timbering were made use of.

Four thousand cubic yards of new concrete, weighing 6,000 tons, exclusive of the immense mass in the old 9 feet thick bed above mentioned, were filled into the foundations at the south side and west end. The concrete was composed of Thames ballast and Portland cement in the proportion of five parts of ballast and one of sand to one part of cement, accurately measured apart and mixed together on a clean-boarded platform after being turned over dry into a heap, and then again into a second, and finally a third heap, to secure thorough admixture, water being carefully added from a watering-pot during the third shovelling to ensure adhesion; the

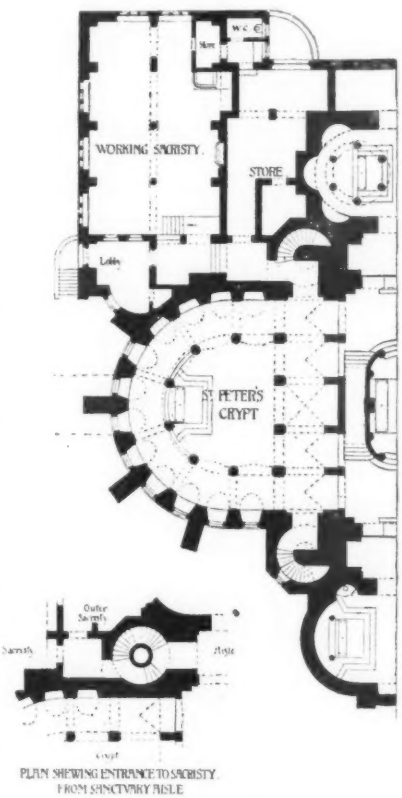
whole was then barrowed, thrown into the trenches in 2 feet layers, and levelled up to receive the brick footings.

The cement was subjected to careful preliminary experiments, being made up in boxes with varying proportions of Thames ballast, and the result awaited. The Architect finally decided to use cement made by Messrs. Trechman, Weekes & Co., "the best Goliath brand." This cement is ground so fine that the residue on a sieve of 5,800 meshes to the square inch will not exceed 10 per cent.

Briquettes kept for twenty-eight days for testing purposes (during the last twenty-seven immersed in water) at the expiration of that time sustained a tensile strain of 550 lb. to the square inch. Over 600 tons of this cement were used, which was on delivery, being too hot for work, placed in a shed and a current of air allowed to pass over and through it, to await the Architect's permission before use. The footings and brickwork of the foundations up to the ground level were entrusted to Messrs. Perry & Co., of Bow.

The brickwork of the footings was double the width of the walls above, the concrete below extending from 1 to 2 feet outside. Two million and more bricks were consumed in the foundations.

Before the brickwork was begun the Architect carefully tested the many samples submitted to him, finally deciding to use Faversham stocks for the lining of the interior behind the future marble and mosaic work. Thin Bracknell red-facings (under 2 inches thick) were used for the exterior, Fletton wire-cut bricks for the large piers and the walls, Poole wire-cut bricks for the smaller piers, and hard vitrified blue Staffordshire bricks for the outside facing of the underground vaults and sacristy, and for the damp courses, set in nearly neat cement. No machine bricks have been used. English bond was adopted generally —the outer facing excepted.



PLAN SHEWING ENTRANCE TO SACRISTY FROM SANCTUARY AISLE

PLAN OF THE CRYPT.

The mortar was composed of Portland cement, "Goliath brand," and clean, sharp Thames sand, mixed in the proportion of one to three. The courses, averaging four to the foot in work, were well rubbed in and flushed up solid as work proceeded, with a good substantial mortar-joint throughout.

The brick tests, carried out with the assistance of Messrs. Kirkaldy, showed the following results :—

Four parcels marked A, B, C, and D, each containing six Fletton bricks, and one parcel (marked E) containing six Poole bricks, were dealt with. Each brick was flushed true on the upper and lower bed, and was bedded between strips of pine $\frac{3}{8}$ inch thick. They were then subjected to a gradually increasing thrusting stress, with the following result :—

In the mean "slightly cracking stress" of the twenty-four Fletton bricks, the resistance stands at 185·6 tons per square foot, and in that of the six Poole bricks at 398·6 tons per

square foot. Under similar circumstances the ordinary London stock would have cracked, it is stated, with one-third the load of the former. The blue Staffordshire bricks resisted pressure up to 700 tons per square foot, and are impervious to moisture.

The exterior (thin brick) walling was bonded to the backing with one course of binders to four of stretchers—without the use of quarter bats. The joints were raked out during progress and pointed with a bold weathered joint as the scaffolding was removed. Rubbing down and scraping of stonework and brick facing were not permitted. For internal facing, stock bricks were used, being a material best adapted for adherence when coated with the bedding for decorative work.

In regard to the masonry, many different varieties of the best hard freestones had to be considered; those of Northamptonshire and Rutland came under notice, but eventually considerations of cost and a ready supply made it manifest that a strong Portland stone from the Brown bed was the best for the external dressings. A high plinth of fine-axed Penrhyn granite, in courses, set with a bold open joint, was placed at the ground level to resist the injury from traffic, forming a dignified base to start the brickwork from. Granite has been used for doorways and elsewhere with the same intent.

The domical construction, the direct outcome of the Architect's plan, cost him much thought and exercise of the inborn Yorkshire caution which characterised him through life. At one period his idea had been to save much centering, by using cast segments of a sphere and building them up into domes. This, no doubt, was a practical constructive scheme, but probably it would have had a tendency to thrust outwards, and it was by degrees that he came to abandon this method for that of a homogeneous mass of concrete thrown on to a *centering* * (really the expensive part of the method). I submit that this outlay has been proved to be true economy, both in the light of results obtained and, possibly, of the outlay incurred. Had his first idea been carried out, the construction might have been a less perfect one than that of the dome of S. Vitale, Ravenna (*i.e.* a spiral coil of earthenware tubes with grooved socketed joints and old amphoræ set vertically); and, moreover, liable to the constructive failures which the history of our craft tells us have occurred time after time since the age of Justinian.

The *Cathedral Record* of May 1899 announces the letting to Messrs. Shillitoe and Sons of the domes and vaulting. By the 15th November the first centre was struck, and three were concreted, and on visiting the works in May 1900 I found the first of the nave centres had been removed, that a second was in process of removal, and the third fixed for the last or westernmost dome; the whole being practically completed at the time of the visit paid by the Congress of Architects in July of that year.

I have alluded above to the composition of the concrete, which was four parts, by careful admeasurement, of clean broken brick well saturated with water before mixing, and one part of cement, in which operation watering was stinted. The mixing was done on a stage set round the domes, and the concrete was thrown on to a close-boarded centre, previously sanded to prevent adhesion, in rings from 3 feet to 5 feet deep screeded on the upper surface to a graduated thickness, to ensure absolute uniformity in longitudinal and latitudinal section. The internal diameter is 60 feet, with a sectional thickness of 3 feet diminishing towards the crown to 13 inches, and the weight of each dome is about 700 tons. The skew-backs or seatings of the pendentives were formed with corbel courses of old granite and York stone. Drain pipes were worked into the haunches for ventilation during construction, and radiating rims or gussets of concrete formed on the extrados at intervals, to carry the artificial-stone covering

* The centering was constructed with uprights standing on stout planking from the floor level, which said uprights supported radiating trussed principals.

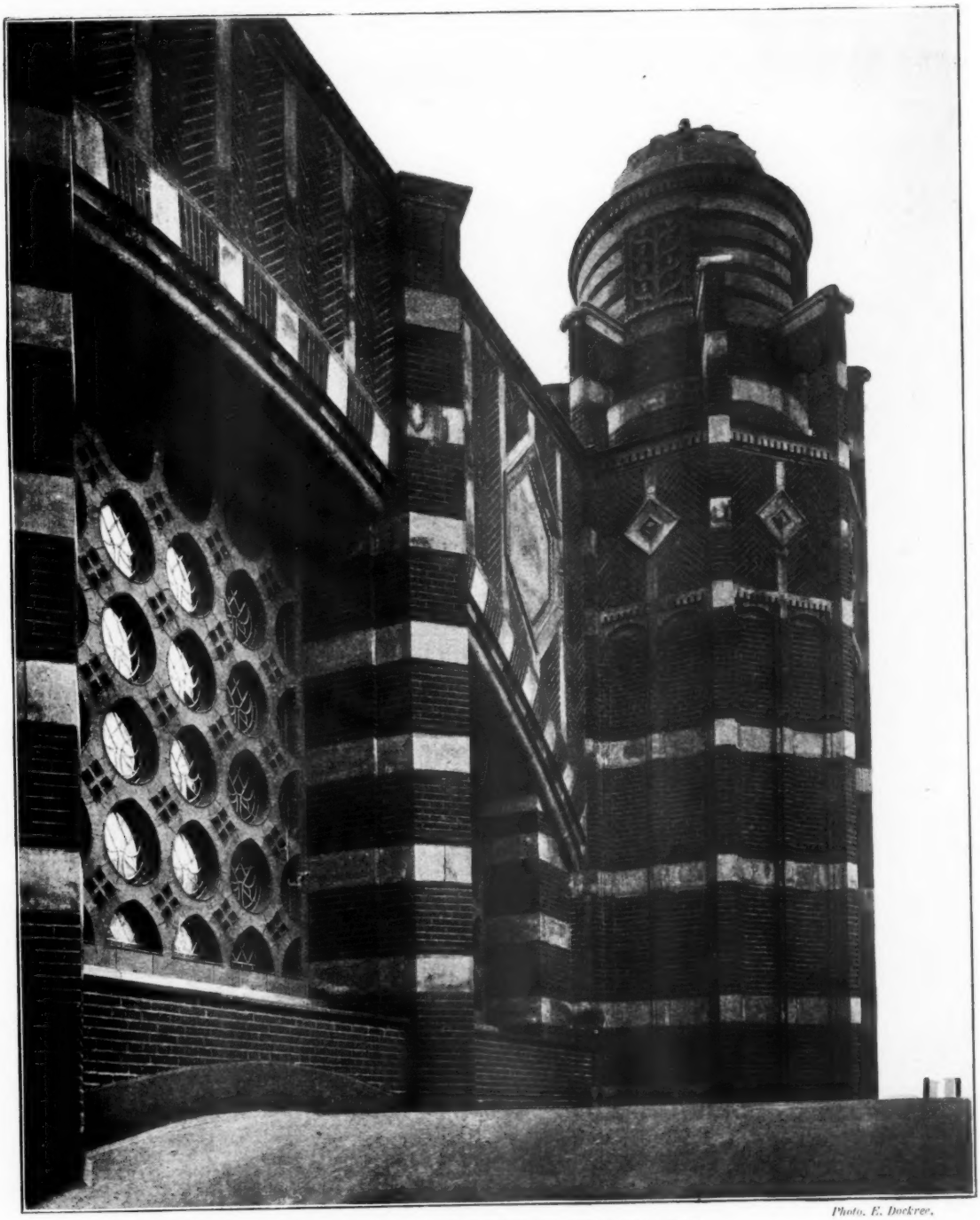


Photo. E. Dockree.

SOUTHERN HALF OF WEST WINDOW OF NAVE, FROM ROOF OF PORCH.

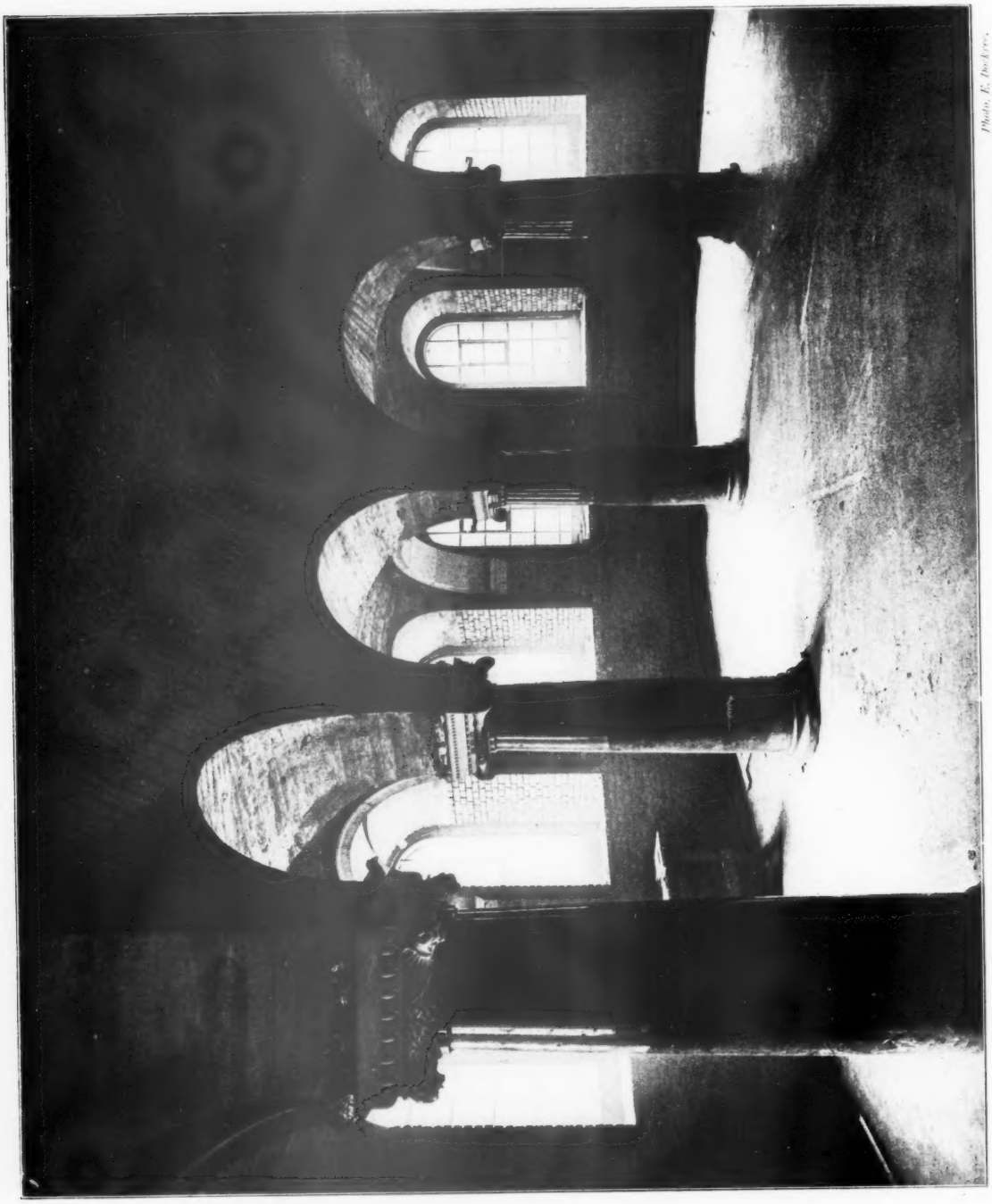


Photo. E. Beckett.

THE CRYPT.

Photo. E. Dockree.

VIEW FROM NORTH-EAST CORNER OF NAVE, LOOKING EAST, AND SHOWING STEPPING TO DOME OVER SANCTUARY.

GENERAL VIEW OF DOMES OVER NAVE, LOOKING WEST.

Photo. E. Dockree.

3 inches thick, which has a rebated system of watertight jointing, and an air-space of 2 inches through-ventilated between the inner surface and the last named. The Sanctuary dome alone is pierced, and there are twelve windows encircling it, with an ingenious system of counterforts flanking each opening. When the great arch supporting the dome over the upper Choir had been completed, the brickwork was found to have risen from the centering 1½ inches, whilst in the arcs doubleaux of the Nave, spanning 10 feet more, it was found to have risen but ½ inch. In the mortar of the former, cement some six weeks old had been used, and of the latter, nine-weeks' old cement. After this experience the Architect decided not to sanction the use of any cement until it had been stored in well-aërated bins on the works for three months, periodically turned over, and the temperature regularly taken before mixing up for use.

The marble monolithic columns are an important portion of the general scheme of colour decoration in the Cathedral, and call for special notice. Great care, skilful research, and a large outlay have been incurred in procuring them. They have been presented by many benefactors. To begin with, in S. Peter's crypt round the apse below the retro-choir they are of red Norwegian granite, with varied capitals of Hopton wood marble, and Derbyshire marble bases.

The columns on either hand of the nave, twenty-nine in number, with capitals of Carrara marble, are of verde antico from the classical quarries lately reopened at Larissa in Thessaly; Greek cippolino from the Island of Euboea; Swiss cippolino from Saillon in the Rhône Valley; Languedoc; Italian breccia from Seravazza; grey granite from Norway; and the red granite which is not unlike ancient porphyry. These shafts, 13 feet long, each stand on a moulded base of Norwegian granite. The columns dividing the aisles of the Blessed Sacrament and Lady-Chapels from the sanctuary are of jasper and red Norwegian marble of lovely colour and figure. There are fourteen columns of pavonazzo in the Sanctuary galleries.

The capitals are delicately sculptured, each varying in design, and were fixed in position after the main arches carrying the domes were completed and the superincumbent weight had taken its proper bearings. The Baldachino above the High Altar, on the design of which Bentley bestowed much care, will be constructed of statuary inlaid with mosaic; and it will be supported by eight superb monoliths of onyx, 15 feet in length, procured from Africa after long search and inquiry. It is noteworthy that the classical quarries of Thessaly and the Island of Euboea were rediscovered—the former by Mr. Wm. Brindley, at the close of the nineteenth century—in time to supply the new Cathedral as they had supplied Justinian's great church in the sixth century. I learn from Messrs. Farmer and Brindley that the columns of verde antico were most probably the first extracted since the quarries were worked for the Emperor Justinian in the sixth century. A number fell into the hands of the victorious Turkish troops during the late war, and were only released after peace had been proclaimed. The Architect is said to have obtained sixty specimens of marbles from various parts of the world.

The leadwork, by Messrs. Matthew Hall & Co., of the rain-water pipes and heads, the roofing of the turrets, campanile, &c., is, as well as the lead window-glazing, noteworthy. Cast lead has been used throughout, and the roofing and ridges are wrought with welted rolls, while the finials have the individuality inseparable from Bentley's work. For many years he had been an adept at the designing of leadwork of all kinds, and the weight of metal used promises a durability worthy of the fabric. The windows are glazed with roundels and white translucent glass, with strong pattern leading. Stained glass has been excluded because it was considered that it would be prejudicial to the lighting and out of harmony with the decorative scheme of the interior.

The steps of the spacious circular newel staircases which give access to the crypt, galleries,

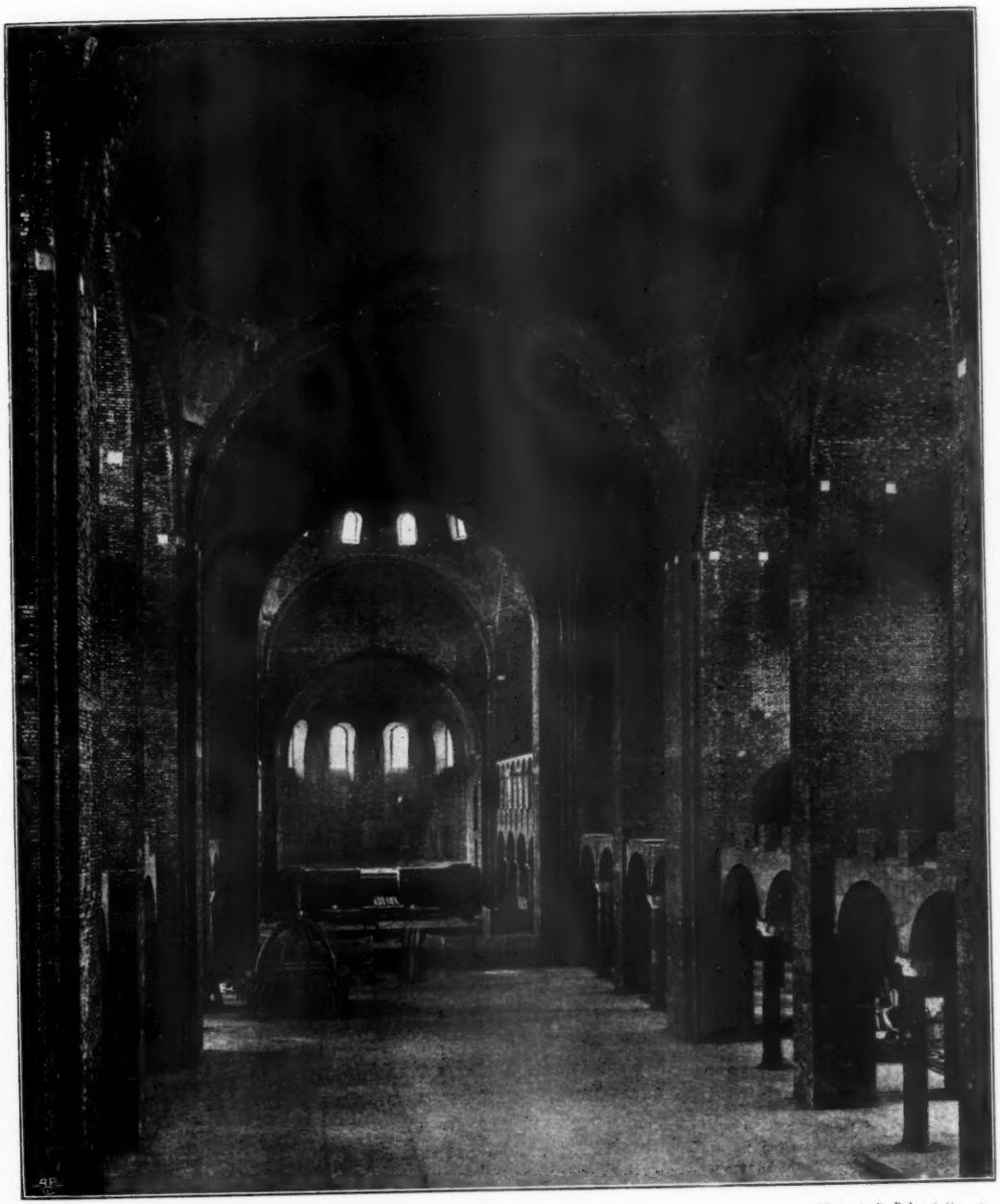
and roofs, and to every portion of the Cathedral, are made of hard artificial stone, composed of Portland cement and crushed granite, supplied by Messrs. Ward & Son and Messrs. Bennett & Son. They were cast in moulds and then immersed in a silicate bath, and the outer covering slabs of the domes are of a like material, which is much harder than stone, and impervious to moisture. The steps are carried by a central brick newel, and are pinned into the walls. The flats and gutters about the domes and roofs are substantially laid with the Val de Travers Company's asphalte, and precaution has been taken to collect together the large quantity of rainfall which must gather on so extended an area, and to run it off rapidly into the capacious lead rainwater heads and conductors to the drains, which have also had especial attention. In the large windows Doulton terra-cotta tracery, or lattices, of varied and piquant design have been made use of.

The Architect gave consideration to the heating arrangements of the Cathedral, as well as to the electric lighting; taking, it is said, much interest in both from the outset. The former is by hot air on Haden's system, to be supplemented by low-pressure steam-pipes in the galleries. The total cubical space to be warmed is some 3,100,000 cubic feet. Two spacious heating-chambers are provided in the basements of the Blessed Sacrament Chapel, and of the Baptistery. The Nave will be lighted by electroliers suspended at intervals from the iron balconies in the centre of the gallery arches.

Having described the materials used in the foundations and general structure, and the procedure in carrying out the work, it remains for me to add that at the close of the year 1896, when the foundations were practically completed, competitive tenders by schedule were obtained for the superstructure from a number of well-known building firms. After due consideration, Cardinal Vaughan accepted the offer of Messrs. Shillitoe and Son, who signed the contract on 5th November and immediately commenced the work. They were subsequently entrusted with the construction of the domes and the completion of the Campanile, &c., the works being measured and paid for at regular intervals.

It is now time that I should notice the general design of the interior and exterior of the Cathedral, arising as they do out of a final consideration of the plan; and after occupying your attention a few moments longer, I propose to conclude my Paper with the lamented decease of the architect on 2nd March last year. It does not appear to me to be fitting to attempt to describe the works of decoration and internal fitting which have been going forward in the interval, as some of them are probably under consideration, and matter merely of discussion between the Cathedral authority and those directly concerned in carrying them on.

I have, earlier in the Paper, Sir, alluded to your views of the artistic results of Bentley's planning, the simple intricacy of its piers, arches, and the like, and I wish to draw your attention to a charming arrangement of the nave arcading—a favourite one with its Architect, who made use of it in his churches at Watford, Brixton, and elsewhere. I refer to the continuous treatment of the arcading along the full length of the Nave to the Sanctuary arch, without ignoring the crux arrangement of the Transepts, which are thereby invested with increase of interest and mystery. This contributes to the perspective and proportion of the interior in a marked degree. In adopting it, a writer in the *Tablet* of a series of articles on "Byzantine Architecture and the Westminster Basilica" (No. VIII.), "The Architect's Choice," 9th February 1901, points out "that he has avoided mistakes made at the churches of S. Sophia, Constantinople, and S. Mark, Venice"—in both churches the disposition of the windows in the tympanum of the great circular arches being bald and unsatisfactory, and the galleries in the former cutting across the space between the piers tending to dwarf the front arches which support the domes. Bentley has constructed coupled arches 25 feet in span, 72 feet 5 inches in height, within 60 feet archivolts carried out on a grand scale, which give the



NAVE LOOKING SOUTH FROM GALLERY. *Photo. S. B. Bolas & Co.*

Nave its unique character. They are crossed by galleries at a height of 27 feet (to the capping of the balustrades), and rise 33 feet above it to the springing, and nearly 46 feet to the crown. He has also scored a success in the lighting. The *Tablet* writer characterises it as "a perfect solving of the problem." The tympanum of each of the main arches is pierced by a semi-circular lunette of 25 feet diameter, filled with delicate tracery, and below, between well-defined pilasters, a pair of windows is devised. The perspective of the interior has obviously been focussed on the High Altar and its covering, the Baldachino, the supreme spot of sacrificial interest. Each bay of the Nave holds in its lateral face the mystical number of seven arches, four on the ground level carrying the galleries, each 12 feet span, two secondary arches of 25 feet span, and the great archivolt "embracing and unifying the whole system"; and he has further happily emphasised the lighting by introducing a series of twelve windows round the Sanctuary dome, by which, "as from a crown, the pure light of Heaven is radiated over the Altar." The principal or western entrance from the exterior flanked by the Campanile, a composition extending 65 feet, and embracing in the great arch three doorways—the outer for the laity, and the middle for the Cardinal Archbishop, and clergy—leads into porches attached to a spacious Narthex the entire width of the church, terminating at one end with an entrance from the side street, and with the Baptistery at the other. The impression of the interior on entering through the great portal is truly described by Professor Lethaby in the *Architectural Review* of January 1902 as one "of reality, reason, power, serenity, and peace. Almost a sense of nature—the natural law of structure." And he testifies to the Cathedral from its vast area and spaces having one of the marked characteristics of S. Peter's, the Vatican basilica, *i.e.* that the height and distance give it an atmosphere of its own. The Narthex gives access to the Nave 60 feet wide, divided into three bays of 67 feet each, covered with domes rising out of pendentives which have been already described. The Aisles, 15 feet wide, are to be used for processional purposes, and also as access to four chapels on either hand; they are separated from the nave by marble columns supporting a continuous groined arcade. From the easternmost bays of the Nave, Transepts of unique and interesting design project with additional entrances, and it will not be out of place to reproduce the Architect's description, which appeared in the *Cathedral Record* of July 1896:—

"In the western half of the Transept, facing Ambrosden Avenue, an entrance is provided, and access obtained to the interior through a porch and lobby. In the other half, continuing the line of the porch, a chapel of small dimensions is introduced to enhance the scale of this portion of the structure. Crosswise, the Transept is divided by a wall, pierced with two arches resting on a column of the same dimensions and character as the columns of the aisles. Continuing the line of the Nave along the Transept, columns are set in pairs to carry the arcade under a gangway, which connects the gallery in the Nave with that in the Sanctuary. The pier at the east angle of the Transept encloses a staircase ascending to an external clerestory and to the roof. On the south side the Transept is similarly treated except that recesses for Confessionals, and a Shrine, are substituted for the Chapel and Porch, and an extra arch is added to the cross-divisional wall."

Two larger chapels, that of the Blessed Sacrament and of Our Lady, open right and left out of the Transepts, with side aisles giving access to the Sanctuary and to the Sacristies.

The Sanctuary, or ritual choir, 65 feet by 50 feet, is surmounted by a dome pierced with windows. Although the Sanctuary is not separated from the nave by a screen, open or otherwise, the separation is very clearly marked by the communion-step, and by a broad passage-way which is formed between the communion rail and the low wall enclosing the Sanctuary—it being recessed in the middle to take the ends of the first steps leading to the higher level.

Above, still further emphasising the distinction, is suspended a gilded and decorated wooden Crucifix, 30 feet high, with paintings of Christ, and at the extremities of the four

VIEW FROM WEST TRANSEPT LOOKING ACROSS SANCTUARY.

Photo, S. B. Bolas & Co.

Evangelists, and behind of the "Mater Dolorosa." This holy rood will be the dominant note of the whole interior.

— CHRISTUS VINCIT — CHRISTUS REGNAT — CHRISTUS IMPERAT —

Right and left of the dwarf wall are to be placed the canons' stalls raised on a marble plinth of the same height as the steps, which ascend from the lower part of the Sanctuary, called the "Presbyterium," to the "Sanctuarium" proper. On this plane is to stand the Baldachino, flanked by eight monolithic columns resting on pedestals taking a semicircular form, and bearing a marble canopy—the whole imparting greater dignity to the High Altar—a block of Cornish granite fine-axed over, 12 feet long and 4 feet wide. It will presumably be clothed with embroidered frontals, or precious metals—such a covering, in fact, as the well-known "Pala d'Oro" in S. Mark's, Venice, or in S. Ambrogio, Milan, and such as stood in more than one of our English cathedrals in the olden time.

On the left or gospel side is the marble Archiepiscopal throne on its own daïs, modelled after the ancient one in the Lateran basilica, and on the right, or epistle side, facing it, the seats for the celebrant, deacon, and sub-deacon, with the credence-table.

Behind the Baldachino under a marble parapet, five arches extend between the pier responds, four opening into S. Peter's Crypt, or Confession, the middle arch being a blank.

At either side a double range of superimposed columns supports the lofts or galleries for the singers, enclosing a ceremonial space, or Sacrarium, in front of the High Altar steps.

From each end of the Altar flights of steps meet in a landing immediately behind, and a further flight leads to the retro-choir, which, as at S. Ambrogio at Milan, S. Miniato at Florence, and elsewhere, is at a higher level, some 13 feet above the nave floor of the cathedral; and beneath it is S. Peter's Crypt and altar. The stalls are arranged in two concentric rows, to be occupied by those whose duty it will be to sing daily the Breviary Hours. This retro-choir has a semicircular apsidal termination. The longitudinal section shows how the Architect has dealt with the problem of the Organ.

The marble Pulpit has been executed in Rome, and is decorated with mosaics. It will be placed against the central pier of the south Transept, and is capacious enough for the Archbishop and his two assistants, who will stand 4 feet above the nave floor, or level with the heads of a seated congregation.

The circular staircases at each corner of the plan, giving access to S. Peter's Crypt and the working Sacristies, to the galleries, tribunes, and the roofing flats, have been already described.

In describing the Chapels it should be noted that there are two larger ones flanking the sanctuary—to wit, the Chapels of the Blessed Sacrament and Our Lady. They are to be sumptuously decorated, the cost of altars, marble work, and mosaics having been subscribed: £12,000 or more collected for the former by the Rev. Kenelm Vaughan in Spain and Spanish America, and £17,000 available for the latter, a bequest by the late Baroness Weld.

Two only of the side Chapels are at present in a forward state of progress. In the Chapel of SS. Gregory and Augustine the altar and marble work are completed and the mosaic work is proceeding; while in the opposite Chapel, that of All Souls, on the north side of the Nave, the altar, with its reredos and pictures in *opus sectile*, is completed, and the finishing touches are being put to the mosaics of the vault and arches, which are from the cartoons of Mr. W. C. Symons.

The erection and decoration of the Altar and Chapel of S. Joseph have been undertaken by another donor. In the Baptistery will be a marble Font designed by the architect, and the large niche will be occupied by a bronze statue, a copy of Thorwaldsen's well-known S. John

the Baptist, ordered by the late Marquis of Bute a few months before his death. The seated figure of S. Peter, a facsimile of the bronze figure familiar to those who have visited the Vatican basilica, which stood in old S. Peter's, has been placed on its marble pedestal against one of the main piers of the Nave.

After this recital of works in hand or contemplated, attention may be directed to the working part of the Cathedral.

Its Sacristies, with strong-room, stores, &c., are spacious and complete in every respect. The upper or vesting Sacristy is 60 feet by 30 feet, with an apsidal recess and altar at one end, and is furnished with oak presses, as in the great Italian churches.

The Cathedral registry is on the ground floor of the Campanile, which is 30 feet square.

Working drawings of a marble flooring of great beauty and originality had been completed by the Architect, a portion of which only is to be carried out.

The exterior appearance of the Cathedral has been so fully described elsewhere that only a passing notice is called for. Its most striking feature is the west front, with the deeply recessed entrance arch, of 40 feet span, enclosing the tympanum, which is to be filled with a mosaic picture. Above it, in bronze letters, is the dedicatory inscription, filling a panel in the centre of the balustrade:

DOMINE JESU REX ET REDEMPTOR
PER SANGUINEM TUUM SALVA NOS.

The Architect in working out the design has surmounted difficulties arising out of opposing rights of light, by setting back the upper portions of this front. Flanking the entrance are the two prominent staircases, with their domical, lead-covered roofs, and behind them rises the narthex. Still further recessed, the front terminates in the large western window which lights the nave.

The entrance arch is 4 feet wider in its span than that of S. Mark's at Venice, and is planned in receding orders, supported on columns whose entablature is carried across the entrance and beneath the three doorways, the doors for which are executed in teak, to be covered eventually with bronze plates. The upper portions of the front terminate, again, with domed turrets, and are flanked to the north by the Campanile, set back from the upper portion of the front, as noted on the plan. It has a delicate entasis. The upper portion is gathered from the square to an octagon crowned by a teak-framed cupola covered with lead, and terminates in the bronze archiepiscopal cross, some 10 feet in height.

To anyone proceeding along Ambrosden Avenue an excellent idea is conveyed of the magnitude of the group of buildings, the length from the campanile to the extreme corner of the Archbishop's House being about 530 feet; and the outline and effect of the arch and transept, of the gables and square pyramidal flanking pinnacles, and the graceful finish of the apse of the retro-choir, is most striking. The Portland-stone banding of the brick facing is carried out throughout the exterior with admirable effect, giving piquancy to the whole. The terra-cotta tracery of the windows is interesting and varied in design.

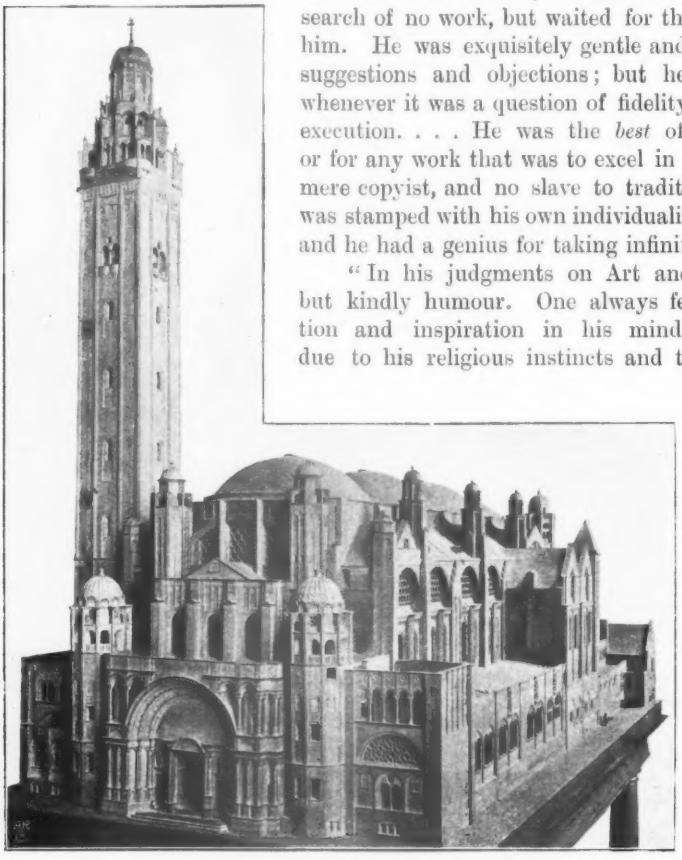
Nothing now is left for me, save to chronicle the death of the Architect, which took place on Sunday, 2nd March 1902. On the previous midday I had seen him at 13 John Street, Adelphi, standing bravely at his drawing-table, and found him full of enthusiasm about the Cathedral's progress and greatly gratified by the honour the Council of this Royal Institute had conferred upon him by nominating him for the Royal Gold Medal. Before parting he brought out the drawings of the Great Crucifix and the marble pavements, on both of which he had much to say. We were to spend the next day together at his home at Clapham Common, but in the evening he had a fatal seizure of paralysis, and passed calmly

to his long rest in the early hours of the Sunday morning. Since that time the works at the Cathedral have gone steadily forward, and the finishing stroke was put to the exterior on 2nd January last by the fixing, on the summit of S. Edward's Tower, of the bronze cross, which had been previously blessed by Cardinal Vaughan, who deposited within it a relic of the Holy Cross.

It is fitting, having accomplished the object I set out for myself, that at this stage I should close my Paper; and I cannot do so more appropriately than by quoting the graceful tribute recently paid by His Eminence Cardinal Vaughan to the memory of his Architect, in speaking of the completion of his *magnum opus*, in the *Cathedral Record* of June 1902:

"Mr. Bentley was a poet; he saw and felt the beauty, the fancy, the harmony, and meaning of his artistic creations. He had no love of money; . . . he had an immense love of Art, a passion for truth and sincerity in his work. He was not ambitious to get on, he was not self-assertive; but he coveted to do well. He went in search of no work, but waited for the work to come in search of him. He was exquisitely gentle and considerate in dealing with suggestions and objections; but he would have his own way whenever it was a question of fidelity to his standard of artistic execution. . . . He was the *best* of architects for a cathedral, or for any work that was to excel in artistic beauty. He was no mere copyist, and no slave to tradition. Whatever he produced was stamped with his own individuality—it was alive and original; and he had a genius for taking infinite pains with detail. . . .

"In his judgments on Art and style there was a critical but kindly humour. One always felt that there was an elevation and inspiration in his mind and character that were due to his religious instincts and to his unworldly standard of life. It seems to me that it will be necessary for the perfection of the work Mr. Bentley has left behind him to retain his mind as a guide to its completion, as far as we can know it. We know what happened to S. Peter's, and to other buildings in which the plan and the genius of the original architect were departed from. Let us maintain the main idea and the unity of Bentley's work to the end."



MODEL OF WESTMINSTER CATHEDRAL [see page 251].

DISCUSSION OF MR. HADFIELD'S PAPER.

The President, Mr. Aston Webb, A.R.A., F.S.A., in the Chair.

Professor BERESFORD PITE [*F.*] said that they had looked forward to this evening with a great deal of interest, and he was sure that none of them had been disappointed. Mr. Hadfield had placed before them the work of a very interesting and beautiful life. Those who endeavoured to read the man in the building, to dissect the thought from the form, had discerned rising in their midst in London the work of a very singular mind, of a very powerful artistic character, and, undoubtedly, the work of a great man. In the midst of an almost entirely Philistine age, under auspices which seemed to have been particularly happy as between the client and the architect, as between a great employer and a great designer, he had carried out a work possessing not the slightest trace of the Philistinism of the age in which it was built. How far a philosophy which succeeded in abstracting itself from the spirit of the age which gave it birth was justifiable in an architect was another matter; but here they had a work of art, a work of genius, a work of character, a work of power, of which they had good cause to be proud, and for which they were, without doubt, thankful to those who had brought about its completion. This thankfulness was to be appreciated when they looked back upon the designs that had been put before the public for this Cathedral in Westminster. He had hoped that Mr. Hadfield would have thrown some light on that very interesting motive for building the votive church of Vienna in London. Mr. Bentley's work as a Gothic architect they knew from Eastlake's interesting history of the Gothic revival. Though he had only built small buildings in London or near to London, these buildings had revealed a remarkably fine mind and something of that strength of design which they associated with Burges' work. Later on came that extraordinary church at Watford, after the one in Cadogan Square—a church that revealed the fact that Bentley's mind was quite able to grasp the refinement and delicacy of the later forms of Gothic work as well as the stronger and more forcible character of the earlier work with which he had commenced. But from the church at Watford to this new Cathedral at Westminster was a very long cry indeed. They found the current movement in English architecture, the early and the latter stage of the Gothic revival, reflected through Bentley's mind in his work, and the sudden placing in his hands of this large commission evidently upset the whole of his preconception of the architectural ideal. Bentley, he imagined, worked in the Gothic movement with that ardent devotion, that almost spiritual appreciation of the mission of Gothic art in England which actuated Pugin and other enthusiastic leaders; and to find them all suddenly disappear, and the artist flinging himself into Ravenna, of all places, into the fever-laden marshes of the Adriatic, for the inspiration of a London cathedral, to follow the Gothic revival, though not to vindicate that movement, but to indicate a departure from it, seemed to him very extraordinary indeed. He did not suppose for one moment that Bentley expected to set a fashion, or to have followers and imitators. His mind seemed to turn in upon itself; he laid aside the traditions which had led him hitherto, and looked within for a new direction in which to express this unusual effort, this extraordinary commission which had fallen to his hands. When they, or their successors, came to look back upon the architectural history of the period, they would, perhaps, be filled with some wonder as to why he should have gone back. This, at all events to him, was one of the most interesting problems connected with the church. That he had gone back, or that he went back, consciously to the fountains of Christian ecclesiastical architecture in the East they could believe, so far as they could see; but he seemed distinctly to have laid aside the type of plan, to have avoided the central grouping, which was invariably connected with the early Christian form of domed church, and to have concentrated all his attention upon designing a nave—a great nave, a fine nave, a long nave, a lofty nave, a dignified nave, with the choir in the end bay. His scheme was original, so far as he could recollect, and entirely without precedent, and, so far, entirely characteristic of the age in which it was built; because they could not work with tradition—they were bound to fall back on originality; and, in spite of Bentley's wish to produce a building based on earliest Christian lines, they had the Gothic nave of the Church of the Cordeliers at Toulouse translated into a simple domed nave of four or five bays, based upon the same principle of lighting, upon the same principle of buttressing, but cut loose from all Gothic feeling in detail, and from any trace of Classic or Renaissance tradition. The effort, however, to try and see his mind in his work was, perhaps, premature. They could not conceive what dreams he had of beauty for that mosaic vault. He (the speaker) suspected St. Mark's, Venice, on a grand scale, worthy of a great city and a great age. He suspected dreams to emulate in mosaic the greatest works of mosaic workers. He suspected a strong reliance upon himself in the drawing and designing

of that mosaic; because one could not quite guess where Bentley would have looked, apart from himself, for inspiration and aid in the drawing of such a scheme to cover such a huge building. But that was gone; that was a thing of the past; that was a thing not to be. They had to be content with it as they found it. But it was magnificent. The nave as it stood with its bare brick-work, its fine proportions, its magnificent lighting and screened lighting was immensely impressive in effect. But it was one effect, and one effect only; there was no change, there was no transit, there was no central grouping; it was the effect of a great nave, such as they found in the church at Toulouse. Of the bigness of this, and the absence of petty fussing details of cornices, they could speak with pleasure and comfort. Some of them could appreciate the pleasure of finding themselves able to deal with proportion, in space, in size, and light, without being troubled with the building up of every story in the design with sameness in detail and features, piling Order upon Order until the required height was attained. That seemed to have been dispensed with, and proportion, massing, and lighting alone relied upon. Upon this the success of the interior depended. Unfortunately, the plan had cramped his exterior design. There was no opportunity on the site for expressing the real dignity of the interior, and it was here that that interesting transept design was disadvantageous. The grouping of a crossing was lost, and the outside scarcely expressed the building. He half suspected that Bentley felt this himself; there was more restlessness, more effort, a more determined attempt to be fresh, in the design of the exterior than in the interior. The proportion, which was successful inside, was not, of necessity, successful outside; and he seemed to have been content to hide the domes, to rely on that great mass of the nave, with a very lofty campanile, and to have emphasised the campanile as the object of his affection and his love. They had to take it as it was, and they could not picture to themselves how it could have been otherwise. That was perhaps the greatest test of its success. They might have their criticisms; they might have their qualifications; but none of them could place themselves in Bentley's standing and say, "this should have been otherwise—I wish it was such!" The building would be the subject of much criticism. It would shortly be opened, and their clients and friends would be asking what they (the architects) thought about the Cathedral, and they would have to formulate some opinion on the matter. But the one thing that stood pre-eminent in the minds of all intelligent architects and artistic persons was that here was the great work of a great man; here was the fine architectural effect and embodiment of a great scheme, of which they must be proud, and for which they should always be thankful. They had to thank Mr. Hadfield very cordially, and he begged to move that the best thanks of the meeting be presented to him for his paper. It had been characteristically modest and thorough. He had touched upon the scientific problems of the building, and had wisely left the artistic ones to plans, to drawings, and to photographs.

Mr. ALFRED EAST, A.R.A., said he had probably been asked to second this vote of thanks—which he did most cordially—because, architecturally, he represented the "man in the street." From that point of view he wanted to say a word in praise of that great building of which they were all so proud. He felt in that building that a great artist had endorsed or built *himself* upon a recognised form, but at the same time had studied the requirements of modern use without loss of dignity. He felt, too, that the preponderating artistic expression was simplicity, dignity, and style. He would thank Mr. Hadfield for that tribute of praise to his friend, because it endorsed some interesting stories of the conception of the building, and the preliminaries to its construction. He also thanked Mr. Hadfield for the light thrown by his Paper upon Mr. Bentley's character and the circumstances which led to the final development of his scheme. As an artist he (the speaker) shared with his fellow-craftsmen a keen interest in architecture; they recognised it as one of the great arts—an art which first impressed one when visiting another country, as it represented the religion, the manners, the customs, and the history of its people. As regards this great Cathedral, they owed the architect a debt of gratitude for avoiding the possibility of a failure. It was a grand thing in these Philistine days to see such a noble erection in their midst. In that sense he cordially seconded the vote of thanks to Mr. Hadfield for his interesting paper, and he hoped that the ultimate design of the architect would be carried out. One thing he would add which impressed itself upon him as an Englishman. As the building was an English cathedral, designed by an English architect, he hoped the decoration would be done by Englishmen. Let them stand or fall by their work. If they failed in the decoration and were inferior, they must submit to the criticism of the world; but he believed they had amongst them men who could carry out the designs of the architect, and he would like that this opportunity, which came so rarely in their country, should be an opportunity of making it thoroughly English work.

Mr. WALTER MILLARD [*A.*] said that Professor Pite had told them that they must make up their minds about this church of Bentley's. He (the speaker) had been trying to make up his mind in his own way. He began by thinking to himself the worst thing he could about it—viz., how un-English was the fashion of it at first sight. For it was un-English to most of them. But he did not think that exhausted the question. To his mind it was designed by a man who was

essentially a student of architecture, and a student of architecture who looked upon architecture and the history of architecture as a whole, looked at it from beginning to end—to now; and also looked at architecture, and monuments of architecture, for what they could tell him about themselves in the first place, and also for what they could suggest for him to do as an architect. A student who merely looked upon existing architecture to know what it was, stopped short of full knowledge; surely, Bentley, as an architect, wanted to go on to know what it told him to practise, to do; and Westminster Cathedral was an illustration of work by a man who had pursued the study of architecture in that broad way. Coming to the building itself, if one was expected to be critical, one could not help expressing a wish, somehow, that his great power, of which the interior gave such proof, of producing fine effects by simple means apparently, had been also exercised when he came to treat the exterior; that, in the same way as he had done in the interior, he had suppressed little things, more especially when the site and surroundings were considered. It seemed to him that any building, like any man, must accommodate itself somewhat to its surroundings, as a man would to his company; and what surroundings had that building to accommodate itself to? Where was the need, for the sake of its company, to make such a display of architectural finery externally? The contrast between his treatment of the interior and the exterior had always impressed him as something he could not quite reconcile or understand; unless it was that Bentley hoped that the surroundings themselves would change some day. It was a site, surely, as little inspiring as anyone could think of. Its chief merit, perhaps, was its cheapness; but, that being so, he still wondered that Bentley gave so much to the exterior—although of course they all knew that he meant the interior to surpass the exterior in richness, variety, and everything else. But the point for us to consider was, what was the lesson that it taught, a great building like that finished at the beginning of the twentieth century—what was the lesson to us? Was it not, in one phrase, for an architect Self-reliance—self-reliance in his studies, self-reliance in his work? Did Bentley depend upon anybody but himself? Well, and justly, may his brother-architects regard him as a man who played the game, wearing himself out in the effort to get his work as right as he could!

THE PRESIDENT, in putting the vote of thanks, said they were all greatly indebted to Mr. Hadfield, who knew Mr. Bentley so well, for bringing this great building before them in so interesting a way. There was no doubt that the building had excited extraordinary interest. That was not, perhaps, to be wondered at, for a great cathedral could not be built, even in the city of London, without attracting notice. It had attracted the interest of architects of all shades of opinion, and had had more influence on the younger men now entering practice than any building erected of recent years. One reason for that, he imagined, was that Bentley had to solve a problem which most of them had to solve from time to time—the old, old story of building a church for an ancient religion, to house that religion in a building which, to some extent at any rate, represented the needs and requirements of the present day. That was where it had interested them to so great an extent. Then, again, as Mr. Alfred East rightly said, the man had built himself into his building. He (Mr. Webb) had been told by Mr. Hadfield that the building was the one end of his life—that he bestowed upon it all the energy and thought and vitality that was in him. One could not go round it, whether one liked it or not, either on the outside or the inside, without seeing in every quoin, in every corner, in every arch, and in every bit of moulding and carving the man himself in it. Another point of interest was that the plan had been the basis of his design; one saw his brain working out the natural result of that plan in the sections and elevations of the buildings throughout. He had made the construction to be his design, and he had let his design be influenced by his construction. That appeared to him to be the essence of all true architecture which could influence men who came to view it after the personality of the architect himself had passed away. They all agreed in hoping with Mr. Alfred East, that where Bentley had left such a magnificent field for decoration, so rare and so required in England, that field of decoration might be open to Englishmen to cover. It would be very interesting if Mr. Hadfield would kindly tell them whether he knew of any scheme that Mr. Bentley had left for that decoration. They knew that he was a master of the decorative art, as well as of the constructive art, and that had he lived he certainly would have dictated to a large extent the motives of the whole of the decoration. He had heard suggestions that there was some such scheme in existence. They must all hope so, and that the mosaic decoration that was now going on was part of some great scheme which Bentley himself devised. Mr. Hadfield had referred to a magnificent design for the marble pavement over the whole of the church, and, although they were told that only part of that was at present to be executed, they hoped that in due time that unique design would be carried out.

MR. HADFIELD, in reply, thanked the meeting for its appreciation of his labours. The preparation of the paper had been a labour of love to him, and it had been a delicate if not difficult task. He could not presume to know Bentley's mind about many things. He was a man singularly secretive, even with his friends; and but seldom spoke about his intentions. With regard to what Professor Pite had said, he could

mention one thing of his own knowledge. Professor Pite wondered how it was that Bentley came to design a building in this style. As far back as the early sixties the study of Byzantine work was no new thing to him; all his early designs for decoration, glass, church plate, and so on, were influenced by it, and he was enthusiastic about the Romanesque architecture of Burgundy and Provence, of the Rhine and of North Italy. He was a man who never took up a thing as a mere fad; if he took a thing up he sooner or later went right through with it. The history of this great Cathedral was that Cardinal Vaughan had asked him to do a certain thing, and, sympathising with and loyally accepting His Eminence's views, he had done his best to realise them; and he went to Italy simply to drive home and concentrate on his task all the ripe knowledge gained by his studies in previous years. He was ever loyal to the best mediæval traditions of the Gothic revival, and admired the genius and work of Augustus Welby Pugin, although he was fond of poking fun at those who took "the true principles" too seriously. He was a man of broad and tolerant mind; and viewed most things architectural from a generous standpoint. The real history of the building was that, having been called upon to design a cathedral on fixed lines, he took up the Justinian tradition as the best way of doing it, bringing it down to the twentieth century level by planning and building a great church suitable for congregational purposes and modern requirements. Mr. Millard's remarks on the general design were beautifully summed up. Bentley was thorough and he was self-reliant. He took pleasure in work for work's sake—his motto was ever "Laborare est orare," and he laid it down that an architect who undertook the designing of anything, a chalice, a stained glass window, church or domestic furniture, or any ordinary piece of building construction, should draw the whole thing out himself in such fashion as would enable the craftsman who had to execute it, to do so with ease and pleasure in his handiwork. He had no doubt written his own life into the building. With regard to Mr. Millard's criticism about the exterior, it might be that the architect had unconsciously played to the "man in the street"; and had gone in for "outside show." But, after all, in looking to St. Sophia for inspiration, his ideal had been to reproduce, as he told them, the glorious Apocalyptic vision here below of that "Cælestis urbs Hierusalem," of which the Royal Psalmist sings, "All the beauty of the King's daughter is from within." His (the speaker's) view was that the exterior had resulted from the plan and sections, and was the logical sequence of the interior. Bentley's arrangement and construction were thorough; but perhaps in the exterior one saw touches here and there which had been directed by his long life studies, and sympathy with mediæval ways of design.

9, Conduit Street, London, W., 21*st March* 1903.

CHRONICLE.

The Royal Gold Medal.

The following letter, addressed to the Secretaries of the Institute, was read at the General Meeting of the 16th inst.:—

Buckingham Palace, 10*th March* 1903.

Gentlemen,—I have to acknowledge the receipt of your letter of the 5th instant, in which you announce for the information of His Majesty The King that the Institute of British Architects has awarded the Royal Gold Medal for 1903 to Mr. Charles Follen McKim.

I have had the honour to lay your letter before The King, and I am now commanded to signify to you His Majesty's approval of this award, and instructions have been given for the Medal to be prepared.—I have the honour to be, Gentlemen,

Your obedient Servant,

D. M. Probyn, General,

Keeper of His Majesty's Privy Purse.

Death of Professor T. Roger Smith [*F.*].

The President, at the opening of the proceedings of the General Meeting last Monday, said it was his melancholy duty to announce the death of another very distinguished member of their body—Professor Roger Smith. He died on Wednesday the 11th inst., and had been laid to rest that day. They all knew him, and they all loved him very much. He had been elected an Associate of the Institute in 1856, and a Fellow in 1863. It was not too much to say that no member of the Institute from that time had taken a more active and more useful part in the work that had been carried on there. Professor Roger Smith was a real student of architecture. He was a very learned man, a very modest man, and a very lovable man. His practice took many forms, and many branches of their art engaged his attention. Whatever he did he did with single-mindedness, and he had that happy and sympathetic quality of being able to meet his professional brethren in all sorts of ways, and he (the President) believed he

was using no language of exaggeration when he said that he had made no enemies in doing so. He had served on the Council and held other posts in the Institute, and was twice President of the Architectural Association. He was District Surveyor for West Wandsworth, President of the British Institute of Certified Carpenters, and Examiner in Carpentry and Joinery and in Sanitary Building Construction to the Carpenters' Company. He was a member, and served for a time as Chairman, of the Statutory Body of Examiners, and Chairman of the Joint Committee which had in hand the question of the amendment of the law of Ancient Lights, on which he was a great authority. He was Architect of the North London Hospital for Consumption at Hampstead, of the Ben Jonson Board school at Stepney, the Sanatorium at Reedham, of the new laboratories at University College, London, and other important buildings. He was the author of numerous papers relating to architecture, and a very large number of young men had passed through his hands as Professor of Architecture and Building Construction at University College, all of whom would, if they had the opportunity, be glad to testify to the value of his teaching and the kindliness of his heart. A fuller notice of his life and work would appear in due course in the JOURNAL; it only remained for him now to express the great regret of the Council and the members of the Institute at the loss they had sustained. He had died full of years and full of honour, they were thankful for that, and they were specially thankful for the memory of him, for his kindliness and the sympathetic way in which he always treated them. It would be the wish of the Meeting, he was sure, that they should forward to his widow and family a sincere vote of condolence in the loss which they had sustained, and an expression of their appreciation of the work he had done for the Institute during his long connection with it.

Mr. Alex. Graham, F.S.A. (Hon. Secretary), said that every Member of the Institute would endorse the respectful and sympathetic words uttered by the President with relation to their deceased and dear friend, Roger Smith. There were many, doubtless, better acquainted with his work and his career than himself, but in all the transactions he had had with him in professional matters he found him a man full of enthusiasm for the work he had to undertake, and always with a sincere desire to do that which was right and just towards his fellow man. He hoped that in the letter to be sent to his relatives some expression would be given of their appreciation of Roger Smith as a man, as well as a professional brother. The goodwill he always displayed to those with whom he had to deal, and the kindliness of heart which prompted him in all his transactions, would be a very pleasant memory to them all. He was quite sure it would be gratifying to his relatives to receive from the Institute as a body an affectionate expression of their reverence for so kind, good-hearted, and worthy a man.

The funeral service was held at St. Peter's, Vere Street, on Monday, and was attended by numerous members of the Council and the general body.

Mr. Hadfield's Paper.

The Paper on Westminster Cathedral attracted a numerous company to the Institute on Monday, some members of the family of the late Mr. Bentley being among the visitors. Before calling on Mr. Hadfield for his Paper, the President stated that the Council had hoped that the Duke of Norfolk and Cardinal Vaughan might be present. The Duke of Norfolk, however, had not yet returned from Rome, and the Cardinal had sent the following letter:—

Archbishop's House, Westminster.

DEAR MR. WEBB,—I regret to say that the state of my health will not allow me the pleasure of accepting your kind invitation. I hope I may see Mr. Hadfield's Paper in print somewhere.

Yours faithfully,

HERBERT, CARD. VAUGHAN.

The Yeovil Competition.

Before the conditions of the competition for the laying out of land in the town of Yeovil were issued, the Town Council were urged by the Institute to model them upon the "Suggestions." No notice has been taken, apparently, of this communication, as the conditions are thoroughly unsatisfactory. The Competitions Committee of the Institute are authorised by the Council to request members to abstain from entering for this competition.

The Vigilance Committee.

The aims of the London Architectural Vigilance Committee, which held its first meeting in the rooms of the Institute on the 17th inst., are set forth in the following circular issued last December:—

DEAR SIR,—In view of the disfigurement of London—past, present, and possibly in the future—by the carrying out of public works, such as bridges, railway stations, street improvements, &c., with little regard to their adequate artistic treatment, it is proposed to form a permanent reference committee, under the title of the London Architectural Vigilance Committee, to deal with the subject.

The objects of the committee would be twofold:—

1. To endeavour to act by influencing public opinion, and, if necessary, to protest against the action of public authorities in refusing to consider qualified advice on the æsthetic as well as sensible treatment of public works of art.

2. To constitute a body which should be able and willing to give competent advice to public bodies when occasion arises, and to place its judgment and advice at their disposal.

With these ideas in view, it is proposed that the committee shall consist only of such persons as, from their artistic position or experienced judgment, are entitled to offer advice or to undertake criticism.

The case of Vauxhall Bridge, in regard to the scheme before the public, has suggested the formation of such a committee. Matters have come to a crisis; either the aspect of London is to be still further injured by persons avowedly indifferent to æsthetic considerations, or something must be done to check the proceedings of public bodies who are evidently unaware of the fact that art and utility are one and the same thing.

Below is a list of those whom it is at present proposed to invite to constitute the committee. The names of an eminent engineer and of the President of the Institution of Civil Engineers are included in the list, as they may be able to give valuable advice on structural questions, and it is hoped that when engineers are convinced of the importance of the architectural treatment of public works, they will be ready to act with us in assisting to secure it. It has also been thought well to include in our invitation two or three distinguished amateurs, who will represent the opinion and feeling of the most cultivated section of the public outside of the artistic professions.

We invite you in the first instance to say whether you approve of the principle of such a committee, and whether you are willing to become a member of it.

Kindly reply to the hon. secretary *pro tem.*, at the above address. We are, yours faithfully,

W. B. Richmond,
H. Heathcote Statham (Hon. Secretary *pro tem.*).

The Right Hon. Lord Windsor, P.C., Lord Balcarres, M.P., Sir John Stirling-Maxwell, Bart., M.P., Sir E. J. Poynter, Bart., P.R.A., D.C.L., LL.D., Sir W. B. Richmond, K.C.B., R.A., D.C.L., T. Brock, Esq., R.A., G. J. Frampton, Esq., R.A., Aston Webb, Esq., A.R.A., P.R.I.B.A., John Belcher, Esq., A.R.A., F.R.I.B.A., Sir Benjamin Baker, K.C.B., K.C.M.G., &c., Sir Thomas Wrightson, Bart., M.P., Professor Pite, F.R.I.B.A., W. D. Caröe, Esq., F.R.I.B.A., H. T. Hare, Esq., F.R.I.B.A., President of the Architectural Association, Dr. Longstaff, L.C.C., M. H. Spielmann, Esq., editor of the *Magazine of Art*, H. Heathcote Statham, Esq., F.R.I.B.A., editor of the *Builder* (Hon. Sec. *pro tem.*).

In a letter to *The Times* a few days ago, Sir Wm. Richmond stated that the object of the committee will be to promote, as far as possible, a more dignified and rational appearance to metropolitan schemes relating to bridges and edifices. Lord Windsor has accepted the office of Chairman.

The late John Bond Pearce [F.].

We regret to announce the death of Mr. John Bond Pearce, of Norwich, a Fellow of the Institute, elected in 1879. He was the son of the late William Pearce, of Intwood, and was born at South Walsham in 1843. He was educated at Beccles, and afterwards served his articles with the late Mr. Morant, then of Yarmouth, and subsequently borough engineer at Norwich and Leeds. He started in business at Norwich, and soon laid the foundations of a very successful practice. He did a great deal of work for public bodies in all parts of Norfolk and Suffolk, and was architect to the Norwich Board of Guardians and the Forehoe Incorporation. The Yarmouth Town Hall and the Norwich Agricultural Hall are his chief works. He built numerous Board schools, restored a number of churches, and did work in connection with most of the workhouses in Norfolk and Suffolk.

Architects' Benevolent Society.

The Fifty-third Annual General Meeting of the Architects' Benevolent Society was held in the rooms of the Royal Institute on Monday, 9th March. There was a good attendance of members, including the President of the Society (Mr. Aston Webb), Mr. J. Macvicar Anderson, Mr. J. T. Christopher, Mr. Reginald St. A. Roumieu, Mr. H. L. Florence, Mr. Graham C. Awdry, Mr. Osborn C. Hills, Mr. T. H. Watson, Mr. Zeph. King, Mr. G. Hubbard, Mr. H. Lovegrove, Mr. G. Inskipp, Mr. George Scamell, Mr. J. R. Moore-Smith, Mr. Percivall Currey and Mr. W. Hilton Nash.

The Annual Report of the Council was read as follows:—

"The Council of the Architects' Benevolent Society have held seven meetings during the year, the average attendance of members being nine. Fifty-two applications for assistance have been investigated, and the sum of £593. 10s. has been distributed in relief. In addition to this, the sum of £205 has been paid to the Society's pensioners.

"The investments which the Council were enabled to make last year in consequence of Mr. Cates' bequest, and the generous response to Mr. Macvicar Anderson's appeal, are now bearing fruit. Had it not been for this addition to the dividends, the Council, it is feared, would have had to report a serious diminution of the income occasioned by the falling off in the amount received in subscriptions. At the close of the financial year, thirty subscriptions were in arrear, notwithstanding repeated and urgent applications for payment. It is hoped, therefore, that the claims of the Society will become more generally recognised, and that the progress which has been made within recent years, both financially and in practical usefulness, may not be checked through the lack of adequate support. Architecture is not one of the most lucrative professions, and those who practise it are not always in a position to make provision for later life or for those depending on them, or to anticipate the needs occasioned by disease or accident. The Society meets the necessities of such cases as these; and the Council, on behalf of their poorer brethren, look to those in prosperous circumstances for sympathy and help.

"The Council desire to thank the President of the Royal Institute of British Architects, who is also their President, for the reference which he made to the Society in his opening address at the

Institute, and the Presidents and Councils of provincial societies who have brought the needs of the Society before their members.

"The Resolutions moved by Mr. J. T. Christopher, and adopted at your last meeting, were subsequently confirmed by a General Meeting convened for the purpose on March 24. The immediate result of these changes in the By-laws was to enable the Council to extend its investments to Colonial stock by the purchase of £363. 2*s*. 3*d*. New Zealand 3 per cent. Inscribed stock (which is now a Trust investment) at a cost of £350; and, further, to increase the number of the Society's pensioners from six to ten.

"The sum of £154. 4*s*. has been received in donations during the year and placed to the credit of Capital account. Contributions were received from Mr. T. E. Collcutt, £25; Mr. T. W. Aldwinckle, £21; Mr. Graham C. Awdry, £20; Mr. Arthur Ashbridge, £10. 10*s*.; Mr. A. W. Chadwick, £10. 10*s*.; Mr. W. Hilton Nash, £10. 10*s*.; Mr. Wm. Owen, £10. 10*s*.; Mr. John Belcher, A.R.A., £10; Sir Lawrence Alma-Tadema, R.A., £5. 5*s*.; Mr. George Frampton, R.A., £5; Mr. J. T. Christopher, £5. 5*s*.; Mr. E. Ingress Bell, £5. 5*s*.; Mr. T. H. Smith, £5. 5*s*.; and Mr. C. T. Whitley, £5. 5*s*. Many donations of smaller sums were also gratefully received.

"Your Council have the pleasure to report that the subscription of the Royal Institute of British Architects has been increased to £21; and that twelve new names have been added to the list of subscribers.

"At the request of the Council Mr. W. Hilton Nash kindly prepared a design to take the place of that hitherto used on the cover of the Red Book. The design was accepted, and Mr. Nash cordially thanked for his services in the matter.

"The following gentlemen being the five senior members retire by rotation from the Council—Mr. Zeph. King, Mr. G. Inskipp, Mr. J. T. Wimperis, Mr. Arthur Green, and Mr. E. Monson. To fill the vacancies caused by these retirements the Council desire to nominate Mr. E. A. Gruning, Mr. Edwin T. Hall, Mr. Lewis Solomon, Mr. William Woodward, and Mr. H. H. Collins.

"The Balance Sheet and Income Account for the year ended December 31, 1902, audited by Mr. Edmund Buckle and Mr. George Hubbard, are herewith submitted.

"The Council have to thank the Royal Institute of British Architects for their increased subscription, and for office accommodation and the use of rooms in which to hold their meetings. Thanks are also due to the Secretary (Mr. Locke) and the other officials for their cordial interest and help in any matter connected with the Society."

The President, in moving the adoption of the Report, strongly urged the claims of the Society on the attention of the architectural profession, and pointed out that the number of architects who supported the Society, in comparison with the number in practice, was not as large as might be expected. It was a matter for congratulation that the Society had been able to increase the number of pensioners to ten, and the Council would like to increase the number still further, as there was nothing so helpful to a man as a small pension which he could rely upon. One of the advantages of the Society to applicants for relief was that there was no publicity attached to the application and that outside the Council no one knew who received help. The President concluded by asking the support of those who were not already subscribers.

On the motion of Mr. Lovegrove, seconded by Mr. Scamell, a vote of thanks was passed to the outgoing members of Council: Mr. Zeph. King, Mr. G. Inskipp, Mr. J. T. Wimperis, Mr. Arthur Green and Mr. E. Monson.

Mr. Macvicar Anderson moved and Mr. Lovegrove seconded the Resolution by which the Council for the year of office 1903-4 was elected as follows:—President, the President of the R.I.B.A., Mr. Sydney Smirke, Mr. H. L. Florence, Mr. Graham C. Awdry, Mr. J. T. Christopher, Mr. F. T. Baggallay, Mr. J. J. Burnet, Mr. J. H. Christian, Mr. R. St. A. Roumieu, Mr. G. Scamell, Mr. E. A. Gruning, Mr. Edwin T. Hall, Mr. Lewis Solomon, Mr. Wm. Woodward and Mr. H. H. Collins.

Cordial votes of thanks were passed to Mr. W. Hilton Nash, the Hon. Treasurer, and Mr. Percivall Currey, the Hon. Secretary, for their services during the past year, and both gentlemen were re-elected to their respective offices.

Mr. W. Hilton Nash proposed and Mr. King seconded a vote of thanks to the retiring auditors, Mr. Edmund Buckle and Mr. George Hubbard, and on the motion of the same gentlemen Mr. E. Buckle and Mr. Henry A. Hunt were elected auditors for the ensuing year.

On the motion of Mr. Inskipp, seconded by Mr. Christopher, a vote of thanks was passed to the R.I.B.A. for office accommodation and use of rooms for the purposes of meetings.

The proceedings closed with a hearty vote of thanks to the Chairman.

The Lightning Research Committee.

The Committee formed two years ago by the Royal Institute of British Architects and the Surveyors' Institution to investigate the action of lightning strokes on buildings, with a view to the improvement of current methods of protection, have circulated among their observers a summary of cases recorded for the Committee of buildings struck by lightning and damaged during the year 1902.

At the beginning of the year the Committee

considered that the previous year's observations had given them all the data needed as regards non-protected buildings, and they decided to confine their attention for the future to cases where buildings were struck and injured in spite of the provision of lightning-rods for their protection. Out of sixty cases recorded for the Committee in 1901 no fewer than twelve were of buildings fitted with some form of lightning-conductor. Considering the numerical ratio of protected to non-protected buildings, and allowing for the fact that protected structures are usually in some of their parts in more exposed positions than the non-protected, the proportion must be considered extremely unequal.

In face of some recent disasters brought to the notice of the Committee it is not surprising that dissatisfaction is felt with the system recommended by the Lightning Rod Conference of 1882. Last year the Committee's observers sent in reports of sixteen protected buildings struck by lightning—some slightly, others very seriously injured, or entirely destroyed in parts. Details of these will be given in the final report of the Committee, together with comments thereon. An interesting case may be quoted. It is that of a large country-house in Sussex, erected some twenty-eight years ago, and till recently without any form of protection. In 1901, a church in the immediate neighbourhood having been struck, the owner of the house, for greater security, decided to have lightning-rods put up. An elaborate system was installed, and completed in March 1902, nearly every portion of the building having its own finial and conductor. During the storm season of last year, the house was twice struck—on 17th June and on 8th August. On each occasion, besides other injuries, a chimney-stack was damaged, the brickwork being split up and the capping-stones dislodged and hurled about in all directions. The lightning-rods on the damaged chimneys were torn from their supports and much bent.

Other protected buildings recently struck, of which reports have been received, include All Saints' Church, Boyne Hill, Maidenhead; St. Andrew's Church, Mark's Tey, Essex; New St. Pancras Church, Marylebone Road; Swanscombe Church, Kent; St. Botolph's Church, Aldgate; St. Michael's Church, Highgate; Devaar Island Lighthouse, Argyllshire; South Foreland Lighthouses; Factory chimney, Nelson, Lancs.; Cavendish Laboratory, Cambridge; Tiffin's School, Kingston-on-Thames; Ainsworth Mill, Lancaster.

All these cases are being carefully studied by the Committee. They hope to be in a position to report on the whole question of lightning protection at the end of the present year, and to offer some suggestions for more efficiently guarding buildings. Meanwhile they desire the continued co-operation of observers in this important inquiry, it being necessary that they should be supplied with as complete details as possible of protected buildings, to enable them to arrive at the causes of failure of the means of protection adopted.

The Committee are contributing an exhibit to the Loan Section of the International Fire Prevention Exhibition to be held at Earl's Court this year, and invite the loan of objects of interest appertaining to the subject for the purpose of adding to their collection. Anyone in possession of relics of lightning disasters, and willing to lend them, is requested to communicate with the Secretary to the Committee at 9 Conduit Street.

The Committee is constituted as follows:—Mr. John Slater [*F.*], *Chairman*; Sir Oliver Lodge, D.Sc., LL.D., F.R.S.; Major-General E. R. Festing, C.B., F.R.S., Director of Science Museum, Victoria and Albert Museum; Messrs. J. Gavey, M.Inst.C.E., Engineer-in-Chief, General Post Office; W. P. Goulding, F.R.G.S., F.S.I.; W. N. Shaw, F.R.S.; H. Heathcote Statham [*F.*]; A. R. Stenning [*F.*], F.S.I.; Arthur Vernon, President of the Surveyors' Institution; Killingworth Hedges, M.Inst.C.E., *Hon. Secretary*.

ALLIED SOCIETIES.

THE ABERDEEN SOCIETY.

The Retiring President's Address.

At the Annual General Meeting of the Aberdeen Society of Architects, held on the 3rd March, the following Address was delivered by the retiring President, Mr. Arthur Clyne:—

GENTLEMEN,—The occasion of our Annual General Meeting seems to me a fitting opportunity to address you briefly on the work of the Society, from its formation, just five years ago, to the present time. And in the first place, I desire to express my sense of the honour you have done me by electing me for three successive years as your President. I can assure you that I value the compliment highly, and I will only add the expression of my regret that I have been unable to do more for the promotion of the Society's interests, and of my hope that the President whom this evening you will elect in my place will be able to do more, and so in some degree make up for his immediate predecessor's shortcomings.

I turn now to the consideration of what we have been doing during the past five years, and I begin by reminding you of the purposes for which our Society was established. These, as expressed by the terms of our Articles of Association, are as follows:—"To support and protect the character, status, and interests of architects practising in Aberdeen; to promote personal acquaintance and good fellowship among members of the profession

in Aberdeen; and to establish and maintain an acknowledged code of professional practice and charges."

How far, then, up to the present, have the objects thus set forth been attained? This is a question the importance of which, I think, merits our attention for a few minutes to-night, and in order to arrive at something like a just conclusion on the subject it is necessary first to pass under review some of the leading events in the Society's short history. This I shall endeavour to do as rapidly as possible.

After applying for and obtaining affiliation with the Royal Institute of British Architects, the first matter of importance calling for the attention of the Society was a question arising out of a difficulty experienced by a member in connection with a provisional sum allowed for gas fittings in a contract for plumbers' work. As to this, the Council held a meeting with representatives of the Plumbers' Association, which resulted in a satisfactory understanding being arrived at regarding the point in dispute. Shortly afterwards the opinion of the Society was asked by the Town Council of Aberdeen as to the amount of remuneration that should be given to the competing architects in the matter of the proposed Fisheries' Exhibition, the Corporation and the competitors having agreed to refer the question to our Council for decision, and one recalls with pleasure the fact that on the basis of the Council's award an agreement was come to on the point which was quite satisfactory to both parties. A little later, a somewhat important conference took place between the Council of the Society and the Federation of Master Builders in Aberdeen, when various proposals were under consideration regarding matters affecting the interests, jointly, of architects and the building trade, among these being the question of the introduction in architects' schedules of a clause to cover insurance against injury to workmen, the term of maintenance of contract work, the practice in regard to provisional sums, and the insurance against fire of buildings in course of construction. Arising out of this, another conference falls to be noted, this time with members of the Master Painters' Association, when certain matters relating specially to this branch of the building trade were discussed, such as the mode of scheduling painters' work and the insurance of plate glass, a general agreement being arrived at on the several points under consideration.

The subject, however, which chiefly occupied the attention of the Society during the year with which I am now dealing (1899) was the proposed new Police and Improvements Bill for the City. Recognising the important bearing of such a measure on many questions connected with architure and the building trade in Aberdeen, our Council took the matter up, and held several meetings on the subject, when the various clauses were considered. Afterwards, in conjunction with representatives of the Master Builders' Federation, they took part in a conference with a committee of the Town Council, at which the whole matter was amicably discussed. While a complete agreement was not arrived at, it is satisfactory to note that the arguments adduced by our Council regarding the clauses to which the Society took exception were respectfully listened to, and had the effect of influencing in some degree our civic rulers in their final revision of the Bill.

I have now briefly to refer to a matter affecting the relations of the Society with the several branches of the building trade in Aberdeen. As we all know, each branch has its separate association (with the exception of the Slater trade, to which reference will be made presently), and perhaps if there is one thing more than another that these associations are agreed upon, it is that architects, in inviting tenders for contract work, should do so from the members respectively of each, to the exclusion of all who are non-members. And with this view I think the Society has no inclination to disagree. So long as every duly qualified master tradesman is eligible for admission to the association we regard such an arrangement as reasonable and just. But we go further, and argue that it should be reciprocal. Ours also is an association whose object is the protection and advancement of our calling, and no one who possesses the necessary qualifications is refused admission to its membership. With the object therefore of establishing, on clearly defined terms, an understanding on the matter, in the summer and autumn of 1900 the Council of our Society, having prepared a draft minute of agreement, held several meetings on the subject with a committee of the Master Builders' Federation, when the various points were fully discussed. Generally speaking the representatives of the several associations concurred in the view of the Society as to the desirability of some such mutual arrangement. It could not be said, however, that on the part of the Federation as a whole there was evidence of any inclination to fall in cordially with the proposal, and after further negotiations, which continued down to the early months of 1901, the Society resolved—I think wisely—not to press it. The matter accordingly was allowed to drop for the present, to be taken up again, I hope, at no very distant date, and carried to a successful issue.

Associated with the subject just referred to is the matter of contractors preparing plans and doing other work which properly falls to architects only to perform. For a long time it had been felt by architects in Aberdeen that on this ground they had just cause of complaint against certain contractors, and now and again efforts had been made, but with only partial success, to have the practice discontinued. Believing, however, that something

might still be done in this direction, early in 1901 our Society took the matter up, and, as the result of its action, I am glad to be able to put on record that a satisfactory understanding was come to, the contractors who were communicated with on the subject readily agreeing to fall in with the view of the Society, and discontinue the practice complained of.

I come now to refer to the matter of the Slaters and their rival associations. In February, 1901, a number of master slaters in Aberdeen submitted to our Society a proposal for the adoption of a uniform code of measurement of slaters' work, and this was agreed to, on the understanding that the slaters were to form themselves into an association, and undertake to tender only to members of the Society, who, in their turn, were to send schedules only to members of the association, or others who should afterwards join it. In May following, however, it transpired that certain master slaters, other than those just mentioned, had also formed themselves into an association, and claimed to be recognised by the Society equally with the other. This situation the Council endeavoured to meet by strongly urging the advantages of amalgamation, and several conferences took place between the Council of our Society and the representatives respectively of the two associations with the object of bringing about this result. All, however, to no purpose, and later on—towards the end of the year—it coming to the knowledge of the Society that certain duly qualified members of the slater trade who had applied individually for membership had been refused admission to No. 1 association, the Society considered it expedient to terminate the agreement with it, members thereupon becoming free, as formerly, to use their discretion as to the slaters to whom schedules should be issued.

In October 1901 the Master House Carpenters' and Joiners' Association and the Operatives' Society came before us with a complaint that of late years a good deal of work properly falling to joiners to execute had been done by cabinetmakers, and asking the Society to co-operate with them in redressing the grievance, by undertaking in future not to send schedules to cabinetmakers for the class of work in question. The subject was fully discussed at several meetings held for the purpose, but after full consideration of the whole question the Society, while agreeing that the joiners had some ground for dissatisfaction, was unable to see its way to come under any specific obligation in the matter.

From time to time the desirability of adopting a fixed schedule of professional charges had been under consideration by the Society, but no active steps as yet having been taken in the matter, in September 1901 the Council drew up a draft scale of fees, &c., which having been considered at several meetings, and revised in January 1902, a general meeting of the Society was held, when the revised schedule was submitted by the Council for approval, and unanimously adopted. This, our recognised code of professional charges, which, it is to be noted, is substantially the same as that of the Royal Institute, I venture to hope members, by conforming in all cases to its terms, will loyally act upon and uphold.

Early in last year the Council of our Society was asked by our Dundee friends to nominate three of its members to adjudicate on the designs and drawings submitted in competition in connection with the syllabus of their Institute. This request, I need hardly say, was cheerfully complied with, and the award, I have reason to believe, was regarded by the Institute as quite satisfactory.

In addition to the matters already mentioned, during the year just past the Council has had under consideration a proposed form of model schedule prepared by the Master Plumbers' Association. This was carefully revised and several alterations suggested and agreed to, but no complete agreement was arrived at, and it is to be noted that the model schedule recently issued by the plumbers, whatever its merits may be, is not to be regarded as representing in every particular the views of the Society on this question.

Of the several matters, however, which have been dealt with by the Council during the past year, the most important, undoubtedly, is that which engaged our attention at an earlier stage of the meeting this evening. As you are aware, the idea of the adoption by our Society of a uniform schedule of general conditions applicable to building contracts is no new one. It was mooted not very long after the Society was first formed, but at that time there was some talk of a federation of the several Scottish societies, and the preparation of such a schedule for the use jointly of all. In view of this the proposal was allowed to drop, to be revived, however, some few months ago, when the matter was taken up by our Council, and by successive stages advanced to the position in which it came before you tonight. In connection with this, it remains for me now only to congratulate the Society on having unanimously adopted the proposed schedule, and I may add that it is a source of gratification to me, personally, that a measure which promises to be of much practical utility to the Society should have been carried into effect during my term of office as President.

I have come now to the end of my review of the leading events in the history of the Society during the first five years of its existence, and rapid and imperfect as the survey has been, I think we are entitled to look upon it as affording evidence of much useful work, quietly performed, and as presenting a record which realises not

inadequately the objects for which the Society was established. While this is the case, however, it does not follow that our Society, as it exists now, is incapable of improvement. On the contrary, it is not difficult to conceive several directions in which its constitution and scope might with advantage undergo alteration. In respect to our rule as to membership, for example. As you are aware, at present the Society consists of one class of members only—viz. architects possessing certain qualifications as to training, &c., and practising on their own account in Aberdeen. Now, while no doubt something may be said in favour of such a limitation, for some time I have been inclined to the opinion that, on the whole, we should do well to widen our circle, to the extent at any rate of embracing a second class, who might be styled Associate or Student Members, and include assistants of members, and probably also pupils. Whether, while we are about it, it would be judicious to go a step further, and include under the term Honorary Members a third class, consisting of persons specially interested in the study of architecture or any of the allied arts, but not professionally engaged in practice as architects (as in the case of many of the other Allied Societies), is perhaps more questionable, although personally I should be inclined to regard favourably such a proposal. While we could have nothing to lose by it, in all probability we should be the gainers by the arrangement. At all events, the whole matter is one worthy of consideration, and I would suggest it as a suitable subject to be taken up and dealt with at an early date by my successor in office and the new Council.

Then there is another direction in which the Society might usefully, I think, do more than it has yet done or attempted. Than the architectural profession I suppose there is no calling the nature of which more imperatively demands for its successful pursuit a thorough and systematic early training, yet I think I am safe to say there is none whose members, speaking generally, are less efficiently equipped in this respect. Much might be said on the subject, but I will not dwell on it now. What I wish to suggest is the possibility of our Society doing something, however little, to assist in the education of pupils of members. As to the form such help might take, whether it would be by way of a course of lectures, the establishment of some system of examination, the offer of prizes, or some other way, it is not for me to speak now. I merely make the suggestion, and if it is thought there is anything in it the idea can be put into shape. I cannot leave the subject, however, without some reference to what is being done in this way in Aberdeen at the present time. I allude to Mr. Irvine's evening classes at the School of Art in connection with Gordon's College. This is a course of tuition, specially adapted for pupils and junior assistants, which supplements in an important degree the instruction obtainable by attendance at the regular classes in the College curriculum, and as such I venture to commend it to the Society as eminently deserving of our sympathy, and, should opportunity occur, active co-operation and support.

In this connection I ought to refer also to the advantages to architectural students in Aberdeen of the opportunities afforded them of examining the Royal Institute prize drawings and testimonies of study. I need hardly say that in an educational sense the study of this very interesting collection of drawings annually is of great value, and as a Society I am sure we gratefully acknowledge our indebtedness to the Institute for the loan of them. May I, however, without presumption, suggest that the Royal Institute of British Architects might do rather more than this? Several other ways occur to one in which that body might exert its influence for the benefit of such societies as ours. For example, there has been present to my mind for some time the idea of a travelling lectureship in connection with the Institute. I mean some arrangement under which the various centres would be visited in rotation at stated periods, and a lecture delivered before the local society, combined perhaps with some system of examination for the benefit respectively of the assistants and the pupils of members. Such a plan, if properly worked out, I feel sure would prove a most useful one—to the several Allied Societies in the first place, but in a wider sense to the profession generally, in respect that it would help to knit together the various centres in a closer bond of union and fellowship, while tending to keep all more in touch—in a real sense more closely in alliance with the parent Institute, and so assisting to bring about that complete union among practising architects in the kingdom which in the highest interests of our profession is for many reasons so greatly to be desired.

THE SHEFFIELD SOCIETY.

Mr. R. E. Leader, in a recent lecture delivered before the Sheffield Society of Architects and Surveyors, on "Surveyors and Architects of the Past," said that practically there were no architects in Sheffield until sixty or seventy years ago. Taking a survey of their older public buildings, one was struck by the regularity with which, whenever anything more important than dwelling-houses within the scope of intelligent masons was required, architects were imported from other places. The explanation was found in the geographical position of Sheffield and the humble standing of the inhabitants. When St. Paul's Church was built, in 1719, Mr. Platts, who erected Wortley Hall, was called in; when the Parish Church had to be repaired, in 1777, Mr. Thomas Atkinson was fetched from York. To Mr. Charles Watson, of Wakefield, was entrusted the Waingate

Town Hall, 1805, and the Infirmary (1793) was entrusted to Mr. John Rowstone, of Birmingham. Woodhead and Hunt, of Doncaster, were the architects for St. George's Church in 1821, and the Surrey Street Masonic Hall (1823), and the Grammar School in Charlotte Street in 1825. Carver Street Chapel (1804) was the work of a circuit minister who had been intended for an architect, and so on. Some of those outsiders did establish themselves in the city, but a race of native architects was rising, and as the surveyors had come from schoolmasters, so the architects came from builders. That was strikingly so in the case of the Drurys and Flocktons. It was not until 1825 that Edward Drury and Sons were designated architects as well as builders. In 1833 William Flockton laid aside the cap and apron and established himself as an architect. The Mount and Wesley College (1836) showed his native talent. There was, too, Mr. Samuel Worth. The name of Mr. J. G. Weightman first appeared in the Directory for 1833, and in 1837 Mr. M. E. Hadfield was at the Corn Exchange. The elevating influence they exercised on the architectural renaissance of the town was reinforced in 1845 when the late Mr. Thomas James Flockton brought to his father's office a fresh knowledge obtained from a larger sphere than the city. With the firms of Weightman and Hadfield and Wm. Flockton and Son opened a new era in the architectural development of the city, and their influence was unmistakably stamped on its streets. The advance marked in their career would be shown by a comparison of St. John's, Park, with St. Marie's, Norfolk Row; or Holy Trinity, Wicker, with St. John's, Ranmoor. Despite their small beginnings the architects and surveyors of Sheffield could hold their own against all comers in sound practical knowledge, ingenious and ever bold adaptation of means to the end, viz. the mastery of design and artistic feeling.

THE GLASGOW INSTITUTE.

The Alexander Thomson Memorial Studentship.

Particulars of this Studentship, which is in the gift of the Council of the Glasgow Institute of Architects, and is competed for every three years, were given in the JOURNAL for 8th February 1902. The following are the awards:—First Prize, £60, to Mr. Wm. Beattie Brown, jun., of 15 St. Bernard's Crescent, Edinburgh; Second Prize, £20, to Mr. Arthur D. Nicholson, 19 Royal Crescent, Glasgow. There were five competitors.

London District Surveyors.

At the last meeting of the London County Council the Building Act Committee brought forward the following recommendations:—

That a new district of Kensington, with its boundaries coterminous with those of the royal borough of Kensington, be formed by uniting the districts of North-west Kensington and South Kensington, and transferring certain portions of these districts to other districts.

That in order to give effect to the above recommendation, the Queen's Park Ward of the Borough of Paddington and the late detached portion of St. George, Hanover Square, on the north side of Bayswater Road, be added during the Council's pleasure to the district of Paddington, but that Mr. Meeson, the District Surveyor for Paddington, be required to pay to the district surveyors who began the supervision of the works transferred to him a proportionate amount of the fees chargeable on such works, calculated on the extent to which they have been supervised by them, and that the portions of the parishes of St. Margaret and St. John the Evangelist, Westminster, north and south of Kensington Gore, and Knightsbridge, at present in the districts of North-west and South Kensington respectively, be added to the district of St. George, Hanover Square North.

That the district of Sydenham be divided into two districts, and that the line of division be the Nunhead and Shortlands Railway to Stumps Hill, and thence by a line along the centre of Stumps Hill to the county boundary, and that the western district be designated Sydenham, and the eastern district Catford.

Mr. George Legg has resigned his appointment as District Surveyor for the district of West Hackney.

MINUTES X.

At the Tenth General Meeting (Ordinary) of the Session 1902–1903, held Monday, 16th March 1903, at 8 p.m., Mr. Aston Webb, A.R.A., F.S.A., in the Chair, with 42 Fellows (including 12 members of the Council), 60 Associates (including 2 members of the Council), 2 Hon. Associates, and numerous visitors, the Minutes of the Special and General Meetings held on 2nd March 1903 [p. 248] were taken as read and signed as correct.

The President announced the decease of Professor Thomas Roger Smith [*F.*], and having referred to his long and active service for the Institute, and to the affection and esteem in which he was held by members, moved, and it was thereupon

> RESOLVED, that the Royal Institute of British Architects desires to express its deep regret at the loss it has sustained by the death of its esteemed Fellow, Professor T. Roger Smith, and to record its high appreciation of his services to the Institute; also that a letter of sympathy and condolence with his family in their bereavement be addressed to them on behalf of the Institute.

The Secretary read a letter from General Sir Dighton Probyn, Keeper of His Majesty's Privy Purse, stating that His Majesty approved of the election of Mr. McKim as Royal Gold Medallist for the current year.

The following members attending for the first time since their election were formally admitted by the President—viz. William Chasen Ralph (Wigan), *Fellow*, and Horace White, *Associate*.

Mr. Charles Hadfield [*F.*] read a Paper on WESTMINSTER CATHEDRAL, which was illustrated by lantern slides, and a discussion having taken place, at the conclusion thereof a vote of thanks was accorded to Mr. Hadfield by acclamation.

The proceedings then closed and the Meeting separated at 10 p.m.